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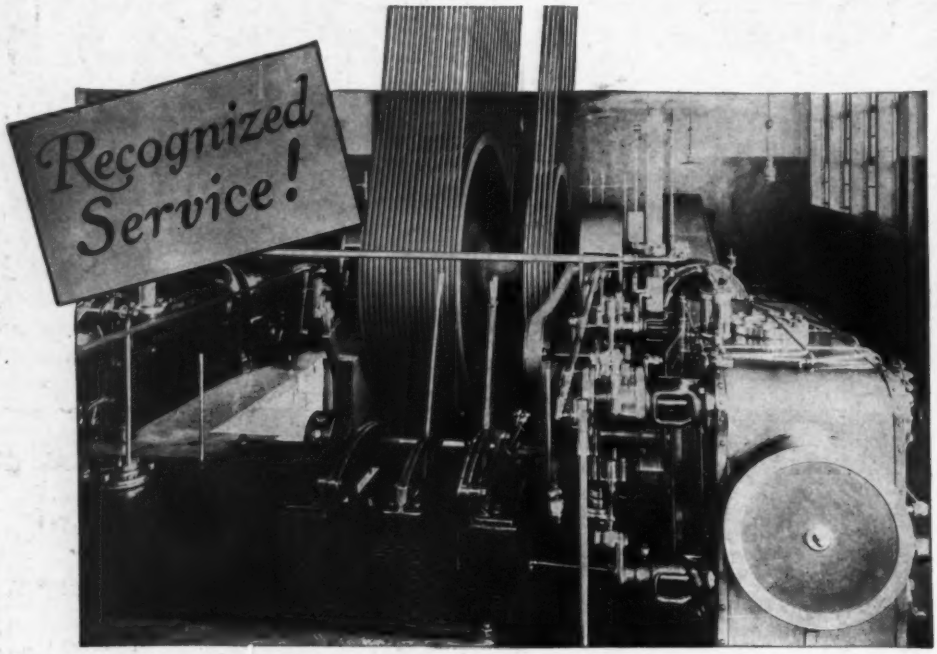

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It's because of the Quality that is built into every Columbian Transmission Rope. This extra long service to which users of Columbian are accustomed is the result of selecting just the proper fibre and making it into Transmission Rope on perfectly adjusted, modern rope machinery.

When you next renew the rope on your drive, specify Columbian *Tape-Marked* Transmision Rope and in the mean time send for the Columbian Book of Rope Transmission.

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COLUMBIAN ROPE CO. AUBURN, N.Y.
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Entered as second class matter August 13, 1925, at the Post Office at East Stroudsburg Pa., under Act of Congress of March 3, 1879. ESTABLISHED 1872 FIFTY-SIXTH YEAR Published every Thursday by the Lockwood Trade Journal Co., at 34 N. Crystal St., E. Stroudsburg, Pa.
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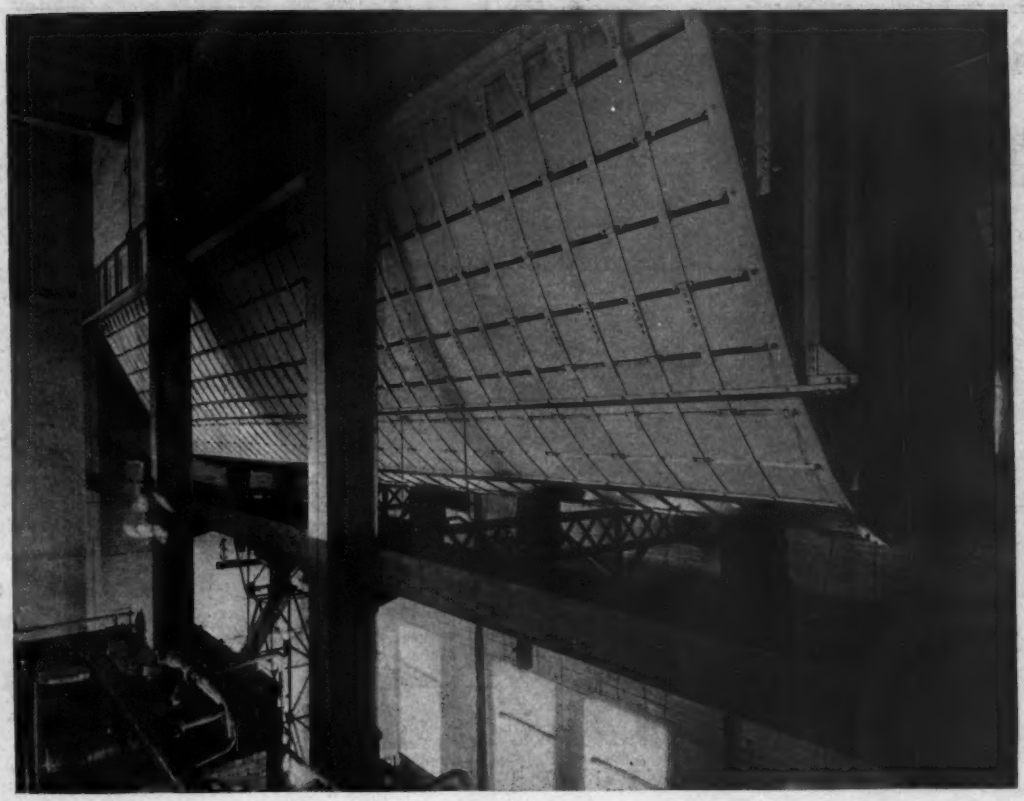

Is This Good Business?

The life of a coal bunker under ordinary conditions may easily be doubled merely by manufacturing it of ***Cast Iron*** instead of Steel Plate.

In Northern United States or in Canada a ***Cast Iron*** Bunker will have treble the life of a steel plate bunker.

During many months these mills must store coal containing a high percentage of water from ice and snow. The water combines with the sulphur in the coal to form sulphurous acid. This highly corrosive liquid eats away the bottom of a steel plate bunker in a few years. ***Cast Iron*** is almost impervious to its action.

If a ***Cast Iron*** Bunker costs $5000.00 and lasts 20 years its cost per year is $250.00. If the same bunker of steel plate costs $4000.00 and lasts 7 years, its cost per year is $460.00.

Thus, by spending 25% more initially, an annual return of 35% on the extra investment is made.

Is that good business? We think it is—and so think hundreds of others who are annually storing millions of tons of material in ***Cast Iron*** Bunkers manufactured by us.

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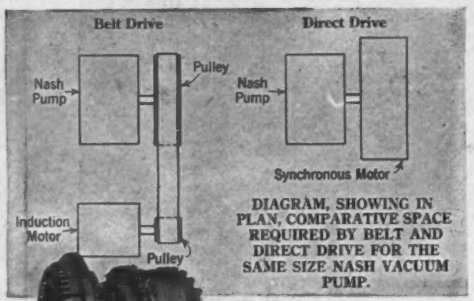
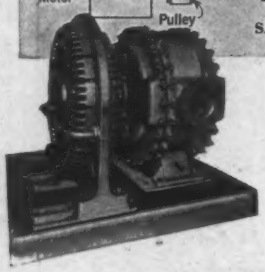
Direct synchronous motor drive is more compact



DIAGRAM, SHOWING IN PLAN, COMPARATIVE SPACE REQUIRED BY BELT AND DIRECT DRIVE FOR THE SAME SIZE NASH VACUUM PUMP.



Nash Hytor Vacuum Pump, direct connected to slow speed synchronous motor.

Nash Hytor Vacuum Pumps *can be direct connected* to slow speed synchronous motors. In fact, the rotor of the motor is mounted on the same shaft that carries the Nash Pump impeller.

As the diagram shows, this is a most compact arrangement.

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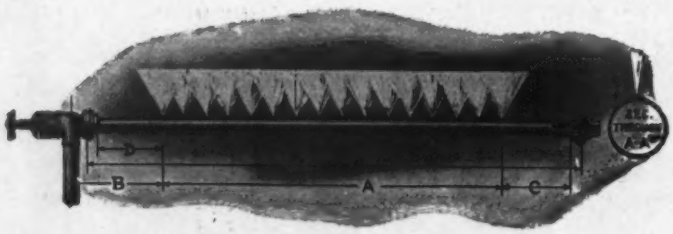
THE "RAINSTORM" SHOWER PIPE



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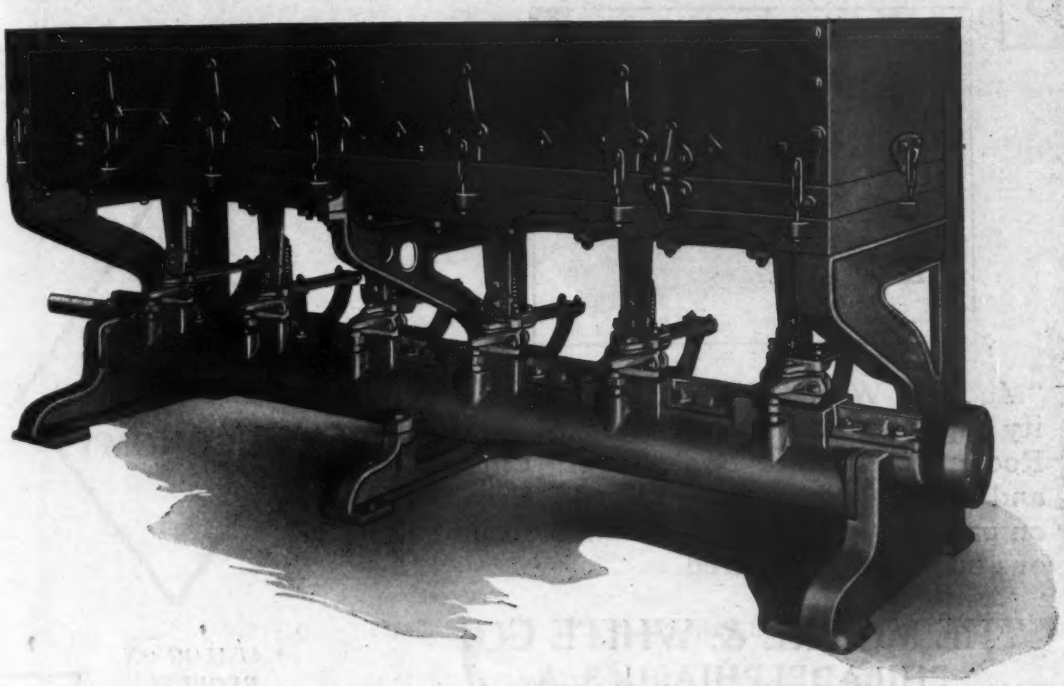

The Appleton Flat Screen

Solidly Built - for Longer Life

LONG LIFE is built into the Appleton Flat Screen. For careful consideration has been given to details that make for rigidity and stability as well as for accuracy and efficiency in operation. The top frame is built of cast iron, and provided with flanged outlets to which the flow box is securely bolted. This gives greater strength and longer life than is possible in the ordinary screen with the top frame constructed entirely of wood.

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Ring-oiling bearings and cam pockets are cast directly in the girt and will not loosen as the machine endures continual use. This factor, together with the use of a strong center support on the 12 and 14-plate screens, and of two center supports on the 16-plate screens, add to the rigidity, efficiency and long life of the Appleton Screen, . . . THE APPLETON MACHINE COMPANY . . . Appleton, Wisconsin.

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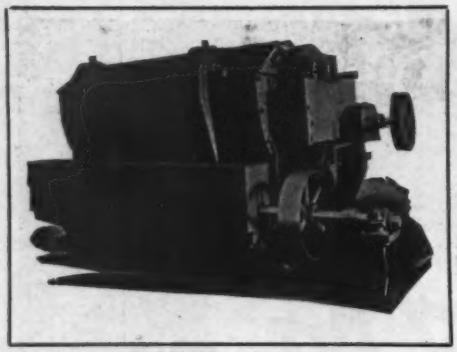
1885



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"Moore & White" Screens produce quality paper whether used on Tissues, Kraft, Roofing Manilas or Book Paper. Lumps and slime spots are eliminated. Breaks on paper are thus prevented and continuous operation is assured.

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1927

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Uniformity of operation
All materials handled mechanically
Reduced labor charges
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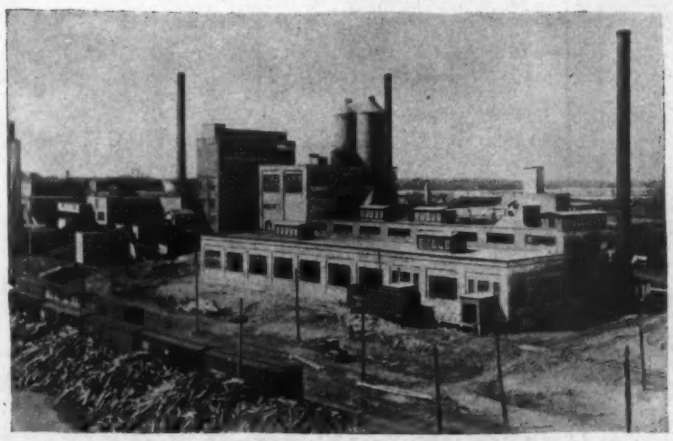
Small floor space requirements
An installation of equipment of proved performance.

Drop the attached coupon in the mail and we will gladly send you detailed information.



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Shepard Floor operated Motor Driven Traveling Hoist on Shepard Underhung Single I-Beam Crane.

Saves $5000 in Labor,

utilizes waste storage

R. S. Lowry, Electrical Engineer, of Champion Coated Paper Co., Hamilton, Ohio, says:

"In our plant—the largest in the world manufacturing coated paper—we have used Shepard Electric Cranes and Hoists for several years with much satisfaction.

"We use 3 Shepard floor-operated traveling cranes over paper machines. Two have two 5-ton hoist trolleys mounted on the span; the third has two 10-ton trolleys on the span. After the paper machines are installed, the cranes are used only to handle repair work, remove finished paper rolls, and do miscellaneous work on the mill floor.

"A cage-operated 1-ton Shepard Electric Crane with a 30 ft. span stores pulp as it is unloaded from cars. For 5 years this work was done by hand, but we were using only half our storage warehouse space because the men could not pile the pulp higher. The Shepard Crane has increased the utilized space in the storeroom 100%.

"4 men are now doing what it formerly required 12 to do, so we are saving 8 men. As this work occupies the men half time, we are saving $5000 a year in labor. We also save demurrage on cars unloaded by the crane.

"3 other Shepard cranes, of 10 and 20-ton capacity, are used over paper machines for installing work, making repairs, and removing finished paper rolls."

The above is one of a number of paper mills which speed up handling by using Shepard Electric Cranes and Hoists. Our engineering department is at your service.

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378 Schuyler Avenue,
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Branches in principal cities.
Largest Manufacturers of Electric Hoists in America

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ELECTRIC CRANES & HOISTS

ORR ENDLESS FELTS

The Orr felts are recognized as most important factors in the production of more and better paper at a lower cost per ton.

These felts are manufactured from wools carefully selected, covering a large experience in manufacturing.

Needless to say they insure satisfactory service.

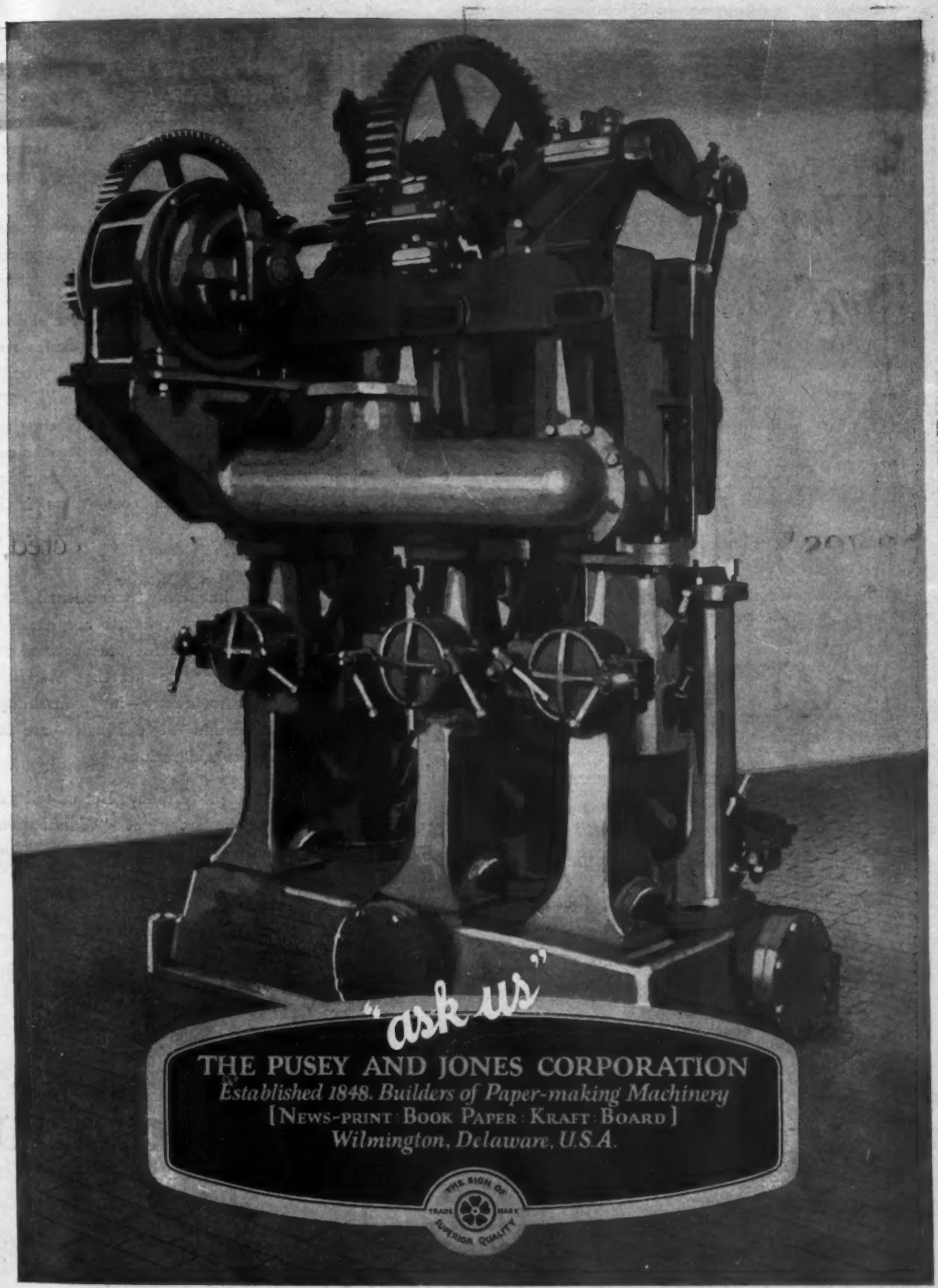
It is possible to weave these felts Endless up to eighty-six feet.

We request a trial, which will prove to your advantage.

Samples of grades required sent upon request.

The ORR FELT & BLANKET COMPANY

Piqua Ohio


"ask us"
THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-making Machinery
[NEWS-PRINT · BOOK PAPER · KRAFT · BOARD]
Wilmington, Delaware, U.S.A.
THE SIGN OF TRADE MARK SUPERIOR QUALITY

The Puseyjones Stuff Pump illustrated above is one of eight recently installed in one of America's great paper mills (name on application).

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Why a Temporary Roof on Permanent Walls?

SUPPOSE you had to replace side walls every eight years or so? Unthinkable! But why take occasional roof replacement as an accepted expense. Roofs over processing rooms and places where high humidities exist need not be replaced after merely a few years of service. "Wolmanized" Lumber Roof Planks are the answer.

Impregnated with the powerful Wolman Salts this lumber provides ***roof insurance.*** A "Wolmanized" roof is good for twenty years or more. The expense of tearing up, replacing and patching is avoided. True it does cost more at the start—but figuring first cost vs. ultimate cost—there is no comparison. You know the sound logic of this.

The "Wolmanizing" treatment is flexible—your requirements are analyzed—the correct lumber is specified for your needs. The fact that ***this lumber does not decay***—its "paintability"—the fixation of the salts—are important considerations.

Make the move today. Let us tell you the whole story of "Wolmanized" Lumber—what it can do for ***you. Write.***

Samples sent on request.

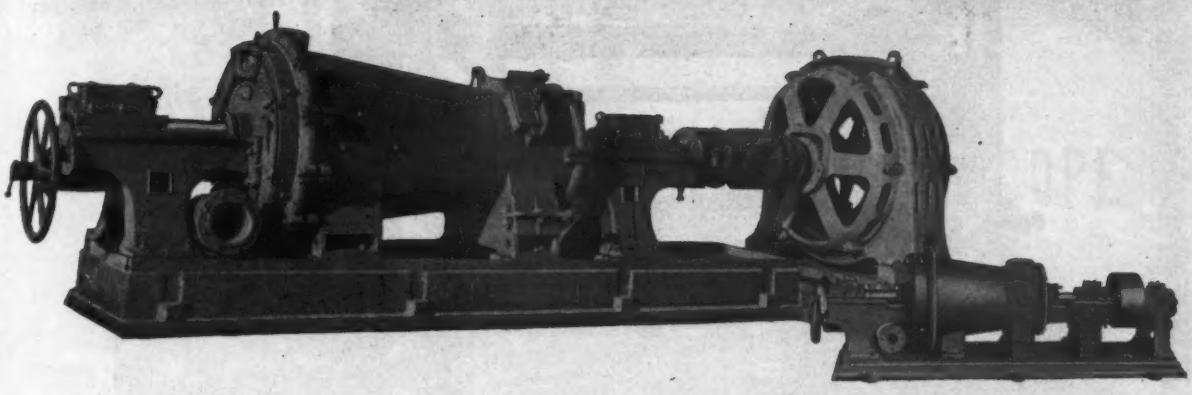
AMERICAN WOLMANIZED LUMBER COMPANY
7 So. Front St., Elizabeth, N. J.

A few facts about "Wolmanized" Lumber

1. The characteristics of the wood remain unchanged.
2. The preservative "stays put" due to unusual fixation qualities.
3. A lower-cost lumber may oftentimes be specified.
4. No discoloration that affects painting.
5. No odor.
6. Can be painted, varnished or stained.
7. Fire-retardant.
8. Treating operation flexible according to individual requirements.

"WOLMANIZED LUMBER

DOES NOT DECAY"



JORDANS

...for every type of paper

The Eight
NOBLE & WOOD
JORDANS

Mastodon
Mammoth, Sr.
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Mammoth, Jr.
Monarch
Bull Dog
Pony
Baby

Direct or Belt Driven

Any of these Jordans can be equipped with Precision Thrust and Frictionless Bearings.

Eight different Jordans ranging in capacity from 3 tons to over 100 tons of stock in 24 hours.

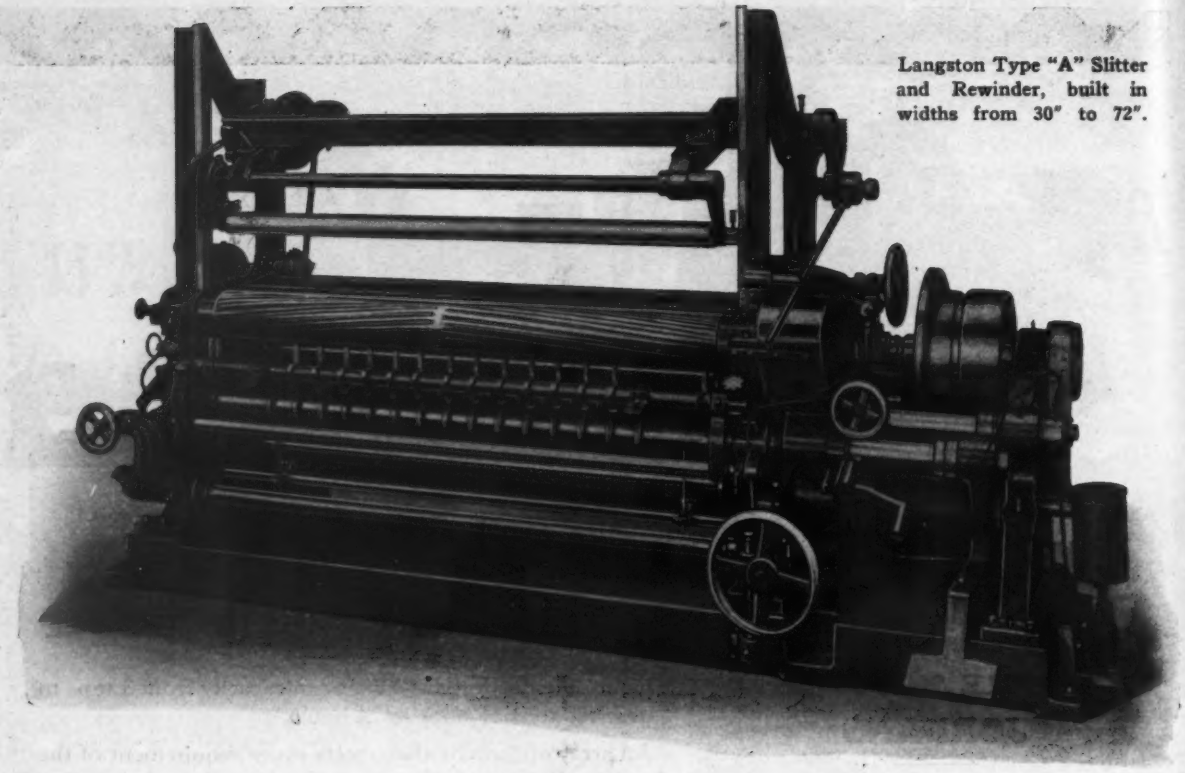
An array of Jordans that meets every requirement of the paper making industry, from the tiny Baby Laboratory model to the huge super-efficient Mastodon.

Jordans for fine work or coarse work; Jordans built to stand the stress of maximum production day after day, year after year; Jordans designed for dependable performance and economical maintenance.

For over a quarter century Noble & Wood Jordans have been feeding ravenous felts and wires with every conceivable grade and variety of stock. Through all these years, Noble & Wood engineers have been meeting and solving paper mill problems, developing and improving this vital unit until, in all its varied range of present forms, the Noble & Wood Jordan is accepted as a standard.

Our engineers can help you select the Jordans best suited to your needs. Our experience and facilities assure you the highest degree of efficiency, economy and satisfaction in this important unit. Consult us,—by mail or in person, any time,—without obligation.

NOBLE & WOOD
MACHINE COMPANY
Hoosick Falls New York



Langston Type "A" Slitter and Rewinder, built in widths from 30" to 72".

Give your customers dustless rolls!

THERE is nothing to be said in favor of the presence of dust in rolls and a great deal to be said against it. In many cases, so much trouble results that the presence of dust or lint in rolls is a nuisance that can't be tolerated.

Dust in adding machine rolls clogs the delicate mechanism of the machines. The same holds for cash register rolls. And rolls containing dust, when used in printing operations are equally troublesome, because the dust is very apt to fill the type faces.

In many other lines rolls carrying dust make trouble. For example, dust in corrugating rolls often gets in the silicate and chokes the circulating system.

Rolls made on a Langston Slitter are free of dust—always. The Langston Shear Cut principle makes a cut similar to that produced by a pair of shears. The cut is clean and the rolls absolutely free of the slightest trace of dust or lint.

Give your customers dustless rolls.

SAMUEL M. LANGSTON COMPANY, Camden, New Jersey
A. H. Cox and Company, Seattle, Washington

LANGSTON

SLITTERS

PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-SIXTH YEAR

Published Every Thursday by the

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LESLIE R. PALMER, President — GEO. S. MACDONALD, Vice-President & Treas. — F. K. HOPPIN, Secretary

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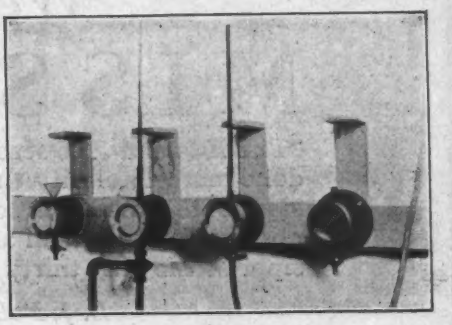
NEW

THE PENESCOPE



FOR EVERY PAPER MILL LABORATORY

The New Penetration Tester

The importance of penetrability in testing paper cannot be over-emphasized.

Permeability to liquids is the important factor in determining the utility of every grade of paper.

The **PENESCOPE** is a compact, convenient tester for determining the rate of penetration of paper and other materials by various liquids.

The **PENESCOPE** has been developed by a practical paper mill chemist, Mr. Allen Abrams, Rothschild, Wisconsin, and is manufactured under patent rights.

Prominent paper mills are using the **PENESCOPE** with success.

Every paper mill laboratory should use the **PENESCOPE.**

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Foreign Capital Now Welcome In

MISSISSIPPI

"The 1924 and 1926 sessions of the Mississippi legislature have done more to clarify the public policy of the State of Mississippi in the enactment of common sense laws and the repeal of obstructive ones than any legislative body has done in Mississippi in the past thirty years."

—L. J. Folse, Managing Director of the Mississippi State Board of Development

Note These Constructive Laws

1. An act exempting stock of non-resident corporations from ad valorem taxes.
2. A law repealing the "Corporation Anti-Landholding Law."
3. Re-organization of the State Live Stock Sanitary Board and the adoption of the state wide stock law. These statutes will end the days of the Texas fever tick in Mississippi and make Mississippi one of the leading dairying states within ten years.
4. An act exempting from ad valorem taxes for five years all improvements on farm lands.
5. A law providing for the assessment of realty and personalty in even years, thus avoiding assessments in the years of general elections.
6. A bill depriving the revenue agent of power to sue under the Anti-Trust Statute; and abatement of the famous Ford suit.
7. An act encouraging domestic insurance companies and providing for a more equitable taxation.
8. An act providing for taxing other domestic corporations on the same basis as individuals, breaking down the restrictions built around corporate activity.
9. A law limiting the county tax levy to 6 mills and reducing the state levy from 8 to 6 mills.
10. A bill empowering hydro-electric companies to exercise the right of eminent domain. This has covered Mississippi with a network of transmission lines, bringing power at reasonable rates to homes and factories.
11. An act authorizing railroad companies to consolidate.

These are only a few of many equally sound statutes enacted recently in Mississippi.

This Great Virgin Empire Holds Alluring Opportunities for New Capital

NEW INDUSTRIES DIVISION

MISSISSIPPI POWER COMPANY

GULFPORT, MISS.

MISSISSIPPI POWER COMPANY

ESTABLISHED IN 1872

PAPER TRADE JOURNAL

With Which Is Combined

Vol. LXXXV, No. 13 PAPER Thursday, September 29, 1927

Chemical Industries Show Better Than Ever

Eleventh Annual National Exposition, Which Opened for the Week at the Grand Central Palace, New York, on Monday Last, Contains a Number of Exhibits—Wide Range of Displays, of Great Importance to the Paper and Pulp Industry, Attract Much Attention—Many Interesting Papers Read at Technical Association Meeting

With an array of all sorts of interesting demonstrations, new and finished products, instruments, equipment, processes, etc., from the simplest to the most intricate and highly technical, the Eleventh Exposition of Chemical Industries—the largest yet given—opened on Monday afternoon on three huge floors of the Grand Central Palace, New York. The big display, generally conceded to be basically the most important of all industrial expositions, continues throughout the week from noon to 10:30 p.m. There are 372 exhibitors.

It is a colorful offering, interesting to the visitor whether or not he is a technical expert. Much of it is planned so as to be understandable to the small manufacturer who is seeking methods of increasing his output or improving his product. Another constructive angle is that students—the technicians of tomorrow—are being welcomed and are permitted to see and learn much that heretofore has been unknown to the average student.

Visitors Attracted from Near and Far

The exposition has drawn thousands of technical men, engineers, industrial chemists, manufacturers and teachers from all parts of the United States and Canada, as well as foreign countries. More than 100 students from various high schools and colleges registered for the unusual educational opportunity offered by the Students' Course in the Fundamentals of Chemical Engineering and Industrial Chemical Practise. Students are divided into two groups; those who have an elementary knowledge of chemistry, and those who are advanced in the subject. Lectures and demonstrations, some with motion pictures, are being given each morning and afternoon throughout the week.

Interesting Government Exhibits

An interesting display is that of the Department of Agriculture, which covers 1,100 feet of floor space, one of the features being the demonstration of developments in the matter of dust explosion prevention. Moth and insect eradication are also demonstrated with a new fumigant which is non-explosive, unburnable and not injurious to stored commodities. Neither is it dangerous to human life.

The Government is further represented with five bureaus of the United States Department of Commerce all of which have most interesting displays, among them being the Bureau of Mines, featuring mining safety devices, including oxygen-breathing apparatus, miners' electric lamps, gas masks, etc. Demonstrations are made revealing the effect of poisonous gases, methods of analyzing carbon monoxide in the air, and the methods of emergency treatment resulting from this gas. Motion pictures are used to illustrate other interesting investigations of the Department.

Some of the Features

Some idea of the wide range of things to be seen at the Palace may be conveyed by mentioning only a few of them. Such things as abrasives, acids, alkalis, salts, antiseptics, beverages, germicides, candy, ice cream, ceramics, glass, pottery, stoneware, coal tar by-products, electro plating, enameling, fertilizers, leather, lubricants, sugar, starch, dextrine, glucose, textiles, dairy products, cosmetics-perfumes, oils, fire proofing, dyestuffs, paints, and so on, almost ad infinitum. Then, too, most interesting demonstrations are made relative to the paper industry, the nitrogen fixation industry, radio activity, photography, metallurgy, hygiene, canning, pickling, preserving, and so forth.

National Safety Council Exhibit

One of the most interesting and important exhibits is that of the National Safety Council. This contains charts, outlining many years of work in the Chemical Industry. This group has made a nation-wide investigation into the hazards of Benzol and the results of this research, which will mean the saving of many lives, may be had in a comprehensive pamphlet. At present the Safety Council has an investigation under way as to the hazards of spray painting. This is of considerable interest to lacquer manufacturers and to industries such as the automobile industry, where spray painting plays an important part in production. The Council through its investigations develops many angles that benefit chemists, engineers and industry as a whole.

The National Committee on Wood Utilization is demonstrating the manufacture of various chemical products derived from wood by distillation.

Exposition Advisory Committee

On the Exposition advisory committee are: A. D. Little, chairman; Raymond F. Bacon, L. H. Baekeland, J. V. N. Dorr, Henry B. Faber, William Haynes, Henry Howard, Charles H. Herty, H. E. Howe, C. S. Lind, H. C. Parmelee, Fred W. Payne, W. T. Read, George D. Rosengarten, Charles F. Roth, H. J. Schnell, W. A. Thompson, T. B. Wagner, R. Gordon Walker, E. R. Weidlein, David Wesson and M. C. Whitaker.

Technical Association Program

The program for the meeting of the Technical Association of the Paper Industry was given on Wednesday, September 28, in the Conference Room at the Exposition. The program comprised a series of ten minute addresses, under the chairmanship of Elmer C. Tucker, president of the association. The addresses were as follows:

"Pulp Washers and Stock Savers," (a) United Filters—R. C. Campbell, (b) Oliver Continuous Filter—Charles Fuhrmeister, Jr., (c) Vallez Rotary Filters—A. H. Vallez.

"Hydrogen Ion Control in Pulp and Paper Mills," Lamotte Chemical Products Co.—W. A. Taylor.

"Evaporation in Chemical Pulp Mills," Ernest Scott & Co.—H. Austin.

"Chromium Plating in the Paper Industry," Chromium Corporation of America—Hugh D. McLeese.

"Dorr Equipment in Pulp and Paper Mills," The Dorr Company—A. Anable.

"Smelting Furnace Lining," Alberne Stone Company—Mr. Bryant.

"Daylight Illumination for Laboratories and Mills and Displays," Sunlike Illuminating Company—Walter N. Polakov.

"Microscopical Examination of Pulp and Paper," Paper Structure and a New Form of Illumination—L. C. Foster (Bausch & Lomb).

"Continuous Centrifugal for Pulp and Paper," Illustrated with Motion Pictures, Laughlin Filter Company—W. C. Laughlin.

"Minerals for Paper Use," Available Deposits Located in Territory Tributary to Southern Pacific Lines—C. M. Redfern.

Annual Banquet of the Chemical Industries

The Fifth Chemical Industries Banquet was held during the Exposition, on Wednesday evening, September 28, under the auspices of the Salesmen's Association of the American Chemical Industry, sponsored by the American Ceramic Society; the American Chemical Society—New Jersey Section; American Chemical Society—New York Section; American Electrochemical Society—New York Section; Chemical Warfare Association; Chemists' Club; Pressed Gas Manufacturers Association; Chlorine Institute; American Institute of Chemical Engineers; American Leather Chemists Association; Manufacturing Chemists Association; Societe de Chemie, Ind.; Society of Chemical Industry; American Society of Testing Materials; American Association of Textile Chemists and Colorists; Synthetic Organic Chemical Manufacturers Association and the Technical Association of the Pulp and Paper Industry, at the Hotel Roosevelt.

The Committee consisted of Ralph E. Dorland, chairman, Dow Chemical Company; A. L. Benkert, National Chemical and Color Works; Williams Haynes, Drug and Chemical Markets; William Mueller, Commercial Solvents Corporation; Ira P. MacNair, MacNair-Dorland Company; Charles F. Roth, Exposition of Chemical Industries and F. P. Summers, National Chemical and Color Works.

Among the many exhibits of special interest to the paper industry are the following:

Atlanta, Birmingham & Coast Railroad

The exhibit of the Atlanta, Birmingham and Coast Railroad is unique and concise. A large display map has been prepared which shows at a glance the location of the mineral resources in the territory traversed by the A. B. & C. Railroad in Georgia and Alabama. One is particularly struck by the wealth of undeveloped resources found in commercial quantity and of great diversity.

The map shows the location of thirty-five distinct commercial minerals and there are many varieties of each type. For instance, the iron ores are represented by the soft red iron ores and the hard red iron ores of the Birmingham District; the gray iron ores from the vicinity of Talladega, Alabama; and the brown iron ores and the manganiferous iron ores from Shinbone Valley, Ala. Likewise, the other minerals are represented by a wide variety of types. Samples are on display representative of the types of the raw materials.

Particular emphasis is laid on the opportunities for the manufacture of paper and wood pulp and the dyeing and finishing of textiles.

Blaw-Knox Co.

Forge and hammer welded pulp digesters are demonstrated at the booth of the Blaw-Knox Company, of Pittsburgh, Pa. Steel digesters used for the manufacture of pulp are subject to changes in pressures and temperatures, resulting in strains of such severity that riveted and autogenously welded joints frequently fail. Moreover, soda and sulphate liquors attack iron oxide which of necessity remains around rivets. This action loosens rivets quickly, thus weakening the structure.

Blaw-Knox Forge and Hammer Welded Pulp Digesters are bottle-tight and leakless. The structure at the weld is homogeneous—one piece with the original plate. There are no weak points to rupture under breathing strains. Hundreds of tests of forge and hammer welded joints have shown efficiencies of from 90 per cent to 97 per cent.

Forge and hammer welded leaching tanks, diffusers and other pulp making equipment are recommended where the service requires bottle-tight construction.

A. J. Bradley Mfg. Co.

Bradley Stencil Machines and Bradley Stencil Papers are displayed at the booth of the A. J. Bradley Manufacturing Company, of New York. The Bradley Stencil Machine cuts cardboard rapidly, accurately and legibly. One stencil cut on Bradley Oil Board can be used over two thousand times with Bradley's Two-in-one Stencil and Marking Ink. The saving in time and money is considerable and the efficiency of the shipping department is greatly increased.

Bradley Stencil Papers are made expressly for users of Stencil Machines. They are made of strong fiber and contain no grit to dull or clog the punches.

The Bristol Co.

The Bristol Company, of Waterbury, Conn., show a great number of recording instruments including the Bristol Automatic Temperature Control for controlling the temperature of oils, gas, steam and water. It is a substantial fact that with the use of these automatic controllers an actual saving of 25 per cent fuel can be accomplished over hand control. Bristol's Recording Liquid Level Gauges also attract much interest. This useful recorder automatically records the depth of water or other liquids in tanks, reservoirs, rivers, canals, sewers, forebays and tail races, also the depth and rate of flow of water over weirs and volume of liquid in tanks. No more accurate or simpler means can be provided for holding liquids at constant level and for taking stock of liquids on hand. The company's new electric tachometer for keeping "tabs" on printing machinery production attracts wide attention from members of the paper industry.

The Dorr Co.

The Dorr Company's exhibit occupies two large booths on the main floor of the Grand Central Palace. As in previous years, small units of Dorr equipment are shown in operation, handling representative chemical products, while models are exhibited, together with photographs of installations at chemical plants.

The new Dorrco Filter is introduced to the chemical industry as a feature of the exhibit, and the principle of operation is illustrated by a small unit dewatering a segregating pulp made up of a mixture of fine and coarse material. This filter is of the vacuum drum type, although different in many respects from other filters of this type. One of the most striking features of its construction is the applying of the filter medium on the inside of the drum, this drum being open at one end and provided with an

internal flange to retain the pulp during filtration. This construction not only eliminates the filter tank, but also takes advantage of the tendency of the solid particles to segregate by gravity against the filter medium instead of away from it.

A six foot diameter Dorr Traction Thickener and Dorrco Suction Pump is on exhibition dewatering a dilute chemical pulp and clarifying the solution in which the solids are suspended. The thickened material, withdrawn by the pump, is mixed with solution in the new Dorrco Repulper and the resulting pulp returned as feed to the Thickener.

The Dorr Traction Clarifier, an application of the Traction Thickener principle for use in square settling tanks, is shown as a five foot square working model. Smaller models of the Dorr Tray Thickener, Dorr Agitator and Dorr Bowl Classifier, are on exhibition, as well as a full scale unit of the Fahrenwald Sizer.

The progress of the company in establishing branch offices in the chief industrial centers of North America, as well as associated companies abroad, is shown graphically by pins on a six foot mechanically-rotated globe of the world. The location of all Dorr equipment now in operation is likewise shown by pins, the heads of which are colored to indicate the material being treated at each installation.

The Eaton-Dikeman Company

E & D Filter Papers are pleasingly displayed at the exhibit of the Eaton-Dikeman Company, New York, with mills at Lee, Mass. Plant managers are turning more and more to filter paper, (with or without filter cloth) as the solution of some of their most difficult filtering problems, and the Eaton-Dikeman Company have grades which are recommended for all pruposes.

Flexible Steel Lacing Co.

The well-known Alligator Steel Belt Lacing for machinery belting is displayed at the booth of the Flexible Steel Lacing Company, of Chicago. Alligator steel belt lacing is recommended for strength, permanence and quick easy application and is adapted for use on leather, rubber, balata, cotton, or canvas stitched belting of any width or thickness. It will hold secure the size belt it is designed for.

Foote Bros. Gear & Machine Co.

An exhibit of unusual interest is that of the Foote Brothers Gear and Machine Company, of 215 West Curtis street, Chicago, where gear of every description is displayed. A valuable method of stepping down electric motor speeds is by means of the Foote Brothers Speed reducers, which are dust proof and fool proof and are ably demonstrated at this booth, including Worm Gear and Spur Gear Speed Reducers.

General Electric Co.

At the large space occupied by the General Electric Company, of Schenectady, N. Y., many products of this world-renowned organization are shown. The operation of induction motors of various types and models is arousing great interest among visitors to the show. Another feature is the equipment used for automatic arc welding. The electric welder is specially adapted to the building up of wornout shafts and is of great interest to paper manufacturers. The welder also does efficient work in repairing large tanks. General Electric Control provides ease and flexibility in the operation of electric motors. Starting, stopping, or change of speed can be handled from various remote points, or if desirable, can be made entirely automatic. All possibility of human error is thus eliminated.

Hendrick Manufacturing Co.

Perforated metal screens in steel and alloyed metals for pulp and paper mills are displayed by the Hendrick Manufacturing Company, of 65 Dundaff street, Carbondale, Pa. The Mitco Interlocked Steel Grating is also an interesting feature of this booth where a steel grating staircase arouses much interest and attention. The Mitco interlocked gratings are neat in appearance, with flush face, easily cleaned and painted, and free from clogging, on account of the rectangular openings, with no acute angles to catch and to hold refuse. At the same time they give maximum light and ventilation.

The Jessup & Moore Paper Co.

The Buck-McRae Electrolytic Cell is ably demonstrated at the booth of the Jessup and Moore Paper Company, of Philadelphia, Pa. This Electrolytic Cell was developed by practical men having years of experience and with the following objects in view: 1—Reducing Floor Space; 2—Eliminating Graphite Fabrication and the attending evils of joined graphite; 3—Reducing Graphite Consumption; 4—Eliminating Solution Leakage from the Cell; 5—Low Power Consumption.

No chlorine consumer can afford not to investigate this merit as it means a large return on a replacement installation and a larger return on a new installation.

LaMotte Chemical Products Co.

An elaborate display of Hydrogen Ion Equipment is shown at the booth of the LaMotte Chemical Products Company, of Baltimore, Md. The importance of Hydrogen Ion Concentration in the paper mill is generally known. This exhibit is very attractively arranged and pleasing to the eye and is attracting great interest from visitors to the show.

Mathieson Alkali Worgs, Inc.

The booth of the Mathieson Alkali Works, Inc., of New York, is attracting hosts of visitors. Chemicals for the pulp and paper industry are ably displayed in this exhibit, including soda ash, caustic soda, liquid chlorine and bleaching powder.

The exhibit includes specimens and literature on "Eagle-Thistle" Anhydrous Ammonia, Aqua Ammonia, Caustic Soda, Soda Ash, Liquid Chlorine, Bleaching Powder, Bicarbonate of Soda, Modified Virginia Soda and Purite, together with the Commonwealth products: Benzoate of Soda, Benzoic Acid, Benzaldehye, and Coumarin. Mathieson Ammonia Cylinders, Liquid Chlorine Cylinders and other containers are also on display.

Morse Chain Co.

Silent Chain Drives are demonstrated at the exhibit of the Morse Chain Company, of Ithaca, N. Y. Selecting the correct drive on small power units assumes greater importance than formerly when considered in its relation to the present day demand for greater production, more reliable, and better service.

The effectiveness of Morse Silent Chain Drives on all types of small and medium-sized operating machinery—from the small drives on sewing machines to the larger sizes driving rolls in a steel mill, is acknowledged.

On machines which must operate continuously—on remote control operated machinery—to conveyor belts—on controlling mechanisms—in fact, wherever there can be no question as to the continuous, reliable operation of the drive—Morse Silent Chain Drives are recommended.

The advantages of Morse Chain Drives for transmitting small powers are exactly the same as for large powers.

New England Tank & Tower Co.

Various types of tanks in operation attract the attention of the visitors to the booth of the New England Tank and Tower Company, of Everett, Mass. This instructive exhibit is of special interest to members of the paper industry. The organization specializes in agitator drives for stock, colors, fillers and sizes, of standard and special design.

The Norton Co.

The exhibit of the Norton Company, of Worcester, Mass., occupies a big space on the main floor. Refractories for Electric Furnaces of the Wire Resistor Type are ably demonstrated and arouse a lot of interest.

Crystolon Muffles, manufactured by the Norton Company, give

(*Continued on Page 24*)

Laurentide Co. Has Successfull Operating Year

Despite Curtailed News Print Production, President Chahoon Believes Industry Is in Stronger Position—Declares Manufacturers Are Not Piling Up Excessive Accumulations to Aggravate Situation—International Developments

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 26, 1927.—At the annual meeting of the Laurentide Company, Ltd., held in Montreal last Thursday, President C. H. Chahoon, Jr., told the shareholders that the company's mills were operating on a curtailed basis. "The world knows," he said, "that we have an overproduction in news print at the present time, amounting to 20 per cent. The industry, however, as a whole is, I think, in a stronger position than it was two or three years ago; that is, operators realize we have this overproduction and I do not think there is any tendency on the part of any operators to pile up large surpluses or do anything that will aggravate the situation. Time alone will overcome that difficulty."

From an operating standpoint the company itself has had a very successful year. There were no forest fires and for the third year in succession there was sufficient rain to prevent any loss from that cause. During the year considerable standing timber had been purchased, all of which is located close to the mills, making it cheap to harvest, and he considered it a very valuable asset. Some 3,000,000 trees had been planted in accordance with the company's reforestation policy, and being adjacent to the mill the wood which will eventually be produced from this source is, in his opinion, going to be very valuable and will one day be Laurentide's prize asset.

Asked regarding the prospects of any change in the price of news print, Mr. Chahoon said there has been little cutting of prices, outside of some cases of freight equalizations. The company does not consider its contracts until November and has had no discussion so far as to the price of paper for the coming year.

A motion was passed, congratulating Mr. Chahoon on the fact that this year marked the 25th anniversary of his joining the company, and drawing attention to the progress of the company and of the town of Grand-'Mere during his administration.

The annual statement was adopted and the retiring board of directors reelected for the ensuing year.

Fraser Companies' Extension Plan

Shareholders of the Fraser Companies, Ltd., of Edmunston, N. B., are in receipt of a letter from the directors outlining the program of extension which has been decided on by the board. The letter says:

"This program includes the addition to your manufacturing capacity at Edmundston, N. B., of approximately 250 tons daily capacity of additional sulphite pulp, groundwood pulp and sulphite board, and the addition of approximately 200 tons per day of sulphite paper and board manufacturing capacity to the plant of your company's wholly owned subsidiary, Fraser Paper, Ltd., at Madawaska, Maine.

"In connection with the financing of the proposed program, it has been decided, subject to the approval of the shareholders, to create for issue from time to time, as deeemed advisable, $6,000,000 face value of 6½ per cent 15-year gold debentures carying the right to subscribe to two shares of no par value common stock at varying prices over certain defined periods for each $1,000 face amount of debentures. In this connection it is proposed to convert the presently outstanding common stock of the company of 100,000 shares, of the par value of $100 each, into 300,000 shares of no par value, and to increase the common stock by 12,000 no par value shares, in order to provide sufficient common shares to permit of the exercise of the subscription rights to be attached to the debentures."

In order to obtain the necessary authorization for carrying out this program, a meeting of the 7 per cent preferred shareholders is to be held at Edmundston, N. B., on October 20, 1927, at 10 a. m. and will be followed by a special general meeting of shareholders at 10:30 a. m. on the same date.

St. Maurice Valley Financing

The St. Maurice Valley Corporation has floated an issue of $2,000,000 first mortgage and collateral trust 5½ per cent sinking fund bonds, maturing September 1, 1957. The proceeds are to reimburse the corporation for substantial recent capital expenditures. These are being offered at 96½ and interest, yielding about 5.75 per cent. The prospectus states that for the first half of the present year earnings available for bond interest and depreciation were at the rate of $3,153,122 per annum, which compares with an annual rate of $2,926,149 for the thirteen months ended December 31, 1926, production of news print for the six months period having been at a slightly higher annual rate than during 1926, although at less than the increased capacity resulting from the new installations completed some months ago.

The present capacity of the corporation and its controlled companies includes over 1,000 tons of paper per day, consisting of 280,500 tons of news print and 22,500 tons wrapping, book and writing papers and other specialties annually. The corporation is the second largest manufacturer of paper in Canada, and in addition has an annual capacity of 18,000 tons kraft pulp, 29,000,000 paper boxes, 300,000,000 paper bags and 60,000,000 shipping bags.

The corporation's available pulp wood reserves are estimated to contain 20,000,000 cords. This includes the corporation's one-third interest in the Anticosti Corporation which owns the Island of Anticosti containing 15,000,000 cords of freehold pulp wood. These substantial areas are sufficient for a practically perpetual supply of pulp wood at the corporation's full rated capacity.

Port Alfred Corporation's Issue

An issue of $10,133,000 30-year 5½ per cent first mortgage bonds is being made on behalf of the Port Alfred Pulp and Paper Corporation, at 97 and interest, yielding over 5.70 per cent. The proceeds will be used to provide funds for the acquisition of the corporation's interest in Quebec Pulp and Paper Mills, Ltd.; to retire $1,860,000 per cent deferred notes which will be cancelled, and to pay off bank loans in their entirety. The corporation will thereby be placed in a strong liquid position, with its fixed charges substantially reduced.

The present daily capacity of the corporation is 600 tons of news print and sulphite pulp or an annual capacity of 135,000 tons news print and 45,000 tons surplus sulphite pulp. The pulp wood areas owned or controlled by the corporation are estimated to contain over 20,000,000 cords, which is considered adequate to provide a practically perpetual supply at full rated capacity.

Paper Mill for Nova Scotia

It is stated that plans for the erection of a paper mill on the Mersey, near Liverpool, N. S., and for the erection of a large sulphite mill at some open port in Cape Breton are now before the Provincial Government of Nova Scotia. One of the names mentioned is that of Ralph P. Bell, of Halifax, who is said to contemplate the erection of a paper mill on the Mersey if he can obtain a lease of certain pulp wood areas from the Crown.

International Developments

Matters have not yet reached a stage where a definite announcement can be made as to the negotiations regarding the taking up of

options secured by the International Paper Company in connection with its proposed pulp and paper mill at Dalhousie, N. B., but engineers of the company have sunk many test posts. It is thought that the unsatisfactory condition of the pulp market may have the effect of holding up negotiations.

The fourth machine in the Gatineau news print mill of the International Paper Company has now begun production. The first machine was started on April 14 and the second and third machines followed on May 19 and June 28, respectively.

Gatineau mill is able to produce paper over 21 feet wide at the rate of nearly a mile a minute. This is equal to 3,385 acres of paper daily or over a million acres a year.

With its Three Rivers and Gatineau mills the company has a capacity of 1,300 tons of news print paper a day, a capacity greater than that of all Canadian news print mills as recent as 1913 and about equal to the entire news print production of the North American continent 30 years ago. The two mills have a capacity equal to last year's production of all the news print mills of Norway and Sweden.

Pulp and Paper Building

The Hon. James A. Robb, Minister of Finance for the Dominion, will lay the corner stone of the new Pulp and Paper Building in Montreal on October 13. The building will house the department of industrial and cellulose chemistry of McGill University and the Pulp and Paper Division of the Forest Products laboratories which are maintained by the Dominion Government as well as providing headquarters for the Canadian Pulp and Paper Association.

Resigns from Nashwaak Co.

F. W. Brawn, mill manager of the Nashwaak Pulp and Paper Company, St. John, N. B., has resigned and has been succeeded by O. F. Bryant. Mr. Brawn has been mill manager since 1922 and is retiring from the industry after a period of 47 years of service both in the United States and Canada, beginning with the firm of Hollingsworth & Whitney in Maine in 1880. In 1920 he became manager of the Fraser Company at Edmundston, N. B., and then came with Nashwaak Company here.

Mr. Bryant, who succeeds to the local management, was formerly with the Laurentide Company at Grand Mere, P. Q., and had formerly been superintendent of the pulp and paper division of the Forest Products Laboratories of the Department of Interior, Montreal. In 1927 he resigned this position to become technical director with Bennett, Ltd., of Chambly, P. Q., and in 1920 he became chief chemist with the Laurentide Company and, this year, in addition to his technical duties, was appointed director of their modern 8,000 h.p. powdered fuel boiler house. He has been active in the work of the Canadian Pulp and Paper Association for over 10 years and chairman of the technical section industry for some two years and is at present a member of the administrative committee for the new Canadian Pulp and Paper Co-Operative Research organization at McGill University.

Huge Unrecorded Fires

Surveys of 15,000 square miles of timber land lying east of Lake Winnipeg, from which the Manitoba Paper Company will draw its supply show that unrecorded fires dating back 50 years and more have ravaged huge tracts of land and taken a heavy toll of forest products in the province's hinterland. The pulp wood berth No. 2 suffered most from the fires, but there is no danger of the mill going short of supplies.

All along the east shore of the lake intermittent fires, of which there is no known record, have razed or damaged the older growth of trees, and in one place a 100-mile stretch running from Manigotogan Lake to the headquarters of the Poplar River, was found to have been stripped in 1885.

The survey, which has just been completed, is one of unique interest as it is one of the largest surveys ever undertaken on this continent, and perhaps in the world. It has demonstrated the thoroughness of combined aerial and land survey work.

Peshtigo Paper Co. Affairs Improve

PESHTIGO, Wis., September 27, 1927.—P. M. Allen, as receiver of the Peshtigo Paper Company, in making his report for the seven months just past and during which he has been acting as receiving manager of that company, presents a complete statement of the activities for that period and has demonstrated what can be done by systematic effort in the way of increasing production, sales, and the curtailmen of accidents.

At the time Mr. Allen assumed charge of the company there were a great many unsatisfied current liabilities and production was on a 33 1/3 per cent basis, while the records as far as accidents were concerned were exceedingly high. Mr. Allen in making his report for the seven months just past shows that his current liabilities have been taken care of fully and that the company is practically on a discounting basis, current bills for the month just closed having all been taken care of.

As far as production is concerned his report shows that the plant has operated at full capacity in every department from February 1 and the only shut-downs have been occasioned through changes made in installing new equipment toward the betterment of the product. It has been the most continuous operation of the plant since the original incorporation of the company.

Production records show that during the month of August every record ever established by the company in its production of pulp, M. G. and M. F. papers, was more than equal and, in fact, a very substantial increase was shown through every department.

An intensive campaign on safety has been carried on, the slogan being "Safety Always." The six weeks just past, including the entire month of August, was without any lost time accidents of any kind whatsoever. Of one hundred and fifty safety suggestions made since February, seventy-five have been found practical and are being enforced at the present time. There is a keen sense of rivalry between the various departments to see that their department continues to be 100 per cent on safety and the result is reflected in the production as well.

The company has enough orders ahead to insure a continuous operation under the receivership and are working at maximum production at the present writing.

During Mr. Allen's receivership two 1500-pound Jones beaters have been installed, making a total of eight beaters with a capacity of approximately 10,000 pounds. These new beaters are equipped with Texrope drives and an additional Texrope drive has been purchased to be installed in another beater. A stuff chest has been built that will hold charges from six beaters which assures a uniform production at all times. This has also been reflected in the quality of the paper that is being made. The company has also purchased a power draft fan which is being installed in the boiler plant as well as additional gauges and recording instruments, and new slasher equipment.

The company is enjoying an enviable position as far as its credit standing is concerned and is having no difficulty in getting material of every kind. It is predicted that September records will surpass those of August.

Norwegian Pulp Market Continues Dull

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 28, 1927.—Latest Norwegian reports all point out that both the chemical and mechanical pulp markets are suffering from dullness and declining prices, says Commercial Attache Sorenson, at Oslo. The last few weeks in this market, he says, have been marked by a general dullness in demand and by unsatisfactory and declining prices. A number of mills report that under present conditions they do not cover production costs, let alone making a profit. It is hoped that the prevailing dullness will eventually be overcome in the ground wood field by the recent agreement between Norwegian and Swedish producers to curtail production.

Paper Demand Steadily Expands in Philadelphia

Both Fine and Coarse Grades in Somewhat Better Request, With Quotations Ruling Steady, and Collections More Satisfactory—Cotton Situation Indicates Higher Prices for Twines—Waste Paper Advances Generally Maintained

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 26, 1927.—While there has been a steady, growing market for paper in the Quaker City, the trade has not been experiencing the customary early autumn demand in the volume that would indicate a normal revival of business. Both coarse papers and fine grades have been more active in the small lot buying that has prevailed, even in these days of brisker commercial needs and upward trend of industrial life. Prices are steadily maintained and collections have been more satisfactory.

Fine Papers Generally Improved

The fine paper division of the trade is making a forward stride that indicates a turn for improvement with the advancement of the autumn. Though orders are still confined to needs of the moment, there are many inquiries for larger purchases in the near future when some definite trend of continued prosperity is assured to the consuming trades. While present business prospects are brighter, the consumer is cautiously awaiting a firmer ground upon which to build for the future, believing that the present revival may not be permanent or hold throughout the remainder of the year. The demand for fine grades has extended to the commercial printing trades, the allied industries now enjoying improved business after almost half a year of curtailment. Prices of fine papers are steady.

Coarse Papers Experience Renewed Activity

There is much favorable comment on the revival of demand for the various lines of coarse papers in the eastern part of Pennsylvania supplied through local distributors. Dealers are confident that the turn for improvement will continue to hold for several weeks to come. No extensive purchases of any of the grades have been made to date but small lot business has been vastly increased and extended to the entire market for specialties and staple lines. Kraft papers top the list for current needs and orders in the total bulk fairly larger tonnage in shipments. There has been an advance in corrugated products due to the increased cost of common paper stock. Paper boards, too, have been subjected to increased prices for similar reasons and now are quoted at $45 for chip and $47.50 for news, an advance of $2.50 and $5 per ton. Mills have plenty of orders for boards. Screenings are in fair demand. Butchers fibers are also fairly well maintained.

Paper Trade Quarterly Meeting

The quarterly meeting of the Philadelphia Paper Trade Association, held at the Chamber of Commerce last Friday, was a joint gathering of the fine paper and wrapping paper divisions devoted to routine business matters and a general discussion of conditions in the local industry. In the absence of David Lindsay, Jr., president of the local organization, the duties of the chief executive were assumed by Vice President T. H. B. Smythe, of J. L. N. Smythe & Co. There was a gratifying report of the paper trade generally with regard to present business and the prospects of Fall business, the distributors in both branches of the trade giving satisfactory account of the revival of the demand for paper within the last half of the month.

Twine Prices Soar

Dealers in the Philadelphia trade who feature a twine department have been advised that prices on cotton twines will be increased from 5 to 6 cents per pound within the week. This advance extends to all lines. The increase is in line with the market for the raw cotton and the shortage which has been forecasted by the Government. Converters of cotton are unusually active anticipating increased business in the immediate future as a result of the predicted scarcity of the new crops. Jute twine has been raised accordingly despite the larger crops of hemp that are reported in India's 1927 growth and the soaring values are merely sympathetic results of the cotton situation where shortage may create a more active market for the twines into which hemp enter chiefly in manufacture. Dealers do not look for the increased values in jute twines to hold later than the holidays and are inclined to buy only for present needs in the hemp made products anticipating a reaction as soon as the Christmas buying is over with.

Paper Stock Moving Briskly

Demand for all grades of paper stock continues to hold to the active markets that set in with the early days of September after a prolonged dearth of orders and the lowest prices in more than a decade. Common grades are very scarce and wholesalers are experiencing difficulties in securing these in sufficient quantities to meet the volume of tonnage demanded by the mills. The low prices that have been prevailing in the paper stock market for the past year have not been inducement for the accumulation of these raw materials and many who were engaged in gathering old paper are now employed in more profitable pursuits. The result is that the wholesalers have been caught short handed in the belated mill buying for the Fall season. Prices on the commoner grades have been steadily increasing within recent days and are now more than 25 per cent above the quotations of mid summer. The rag market continues in the lethargy that has marked its course for the past six months or more.

J. L. N. Smythe Leaves Hospital

Those paper men who attended the quarterly meeting of the Paper Trade Association extended congratulations to Vice President T. H. B. Smythe upon the recovery of his father, business associate and veteran head of the firm bearing his name. Mr. Smythe, who is nearing the four score mile stone of life has been confined to the University Hospital suffering from sciatica. Following a series of treatments for the ailment he was able to return to his home during the week and is expected to be at his desk within the early days of the coming month.

McDowell Paper Mills Install Pulper

Throughout the past few months the completion of the electrification of the units of the McDowell Paper Mills have been effected, the last innovation being that of the installation of a Lavoye Pulper, with a General Electric Motor. With the latest electric device, the McDowell Mills are now brought up to date in every detail of mechanical improvement that will facilitate the handling of orders for its various lines with despatch. The Mills have been operating at full capacity on the glassine and grease proof specialties and fancy wrapping papers that have been in heavy demand with the current month.

Modernized Boiler Plant for Bayless Mfg. Co.

With the replacement of the piping units of the plant of the Bayless Manufacturing Company, of Austin, Pa., manufacturers of sulphite fibres and screenings, and other specialties, there has been added to the improvements of the mechanical equipment a new Badenhausen Boiler Plant of high pressure. This is being operated by electrical motors supplied by the General Electric

Company, Philadelphia offices, paper mill division, under Frank E. Winslow.

P. H. Moran Joins Northampton Paper Co.

P. H. Moran, who was formerly associated with the Luzerne Paper Corporation, of Hadley, N. Y., is now affiliated with the Northampton Paper Co., at Raubsville, Pa., as superintendent of the plant. The latter concern is also under the control of interests identified with the Luzerne Paper Company.

Fire In Phil Fibre Box Board Mills

Fire due to an overheated smoke stack caused the roof of the Phil Fibre Box Board Mills to be partially burned during the past week, when an early morning alarm called the fire department to the plant at Water and Tasket streets, to fight the flames for more than an hour. The fire occurring at 3 a. m. on Sunday morning was confined to the roofing and proved to be a stubborn problem for the fire fighters. The flames were extinguished with small loss.

Paper Men At Graphic Arts

Among the Philadelphia paper dealers who journeyed to New York to attend the Graphic Arts Exposition last week were President Norbert A. Considine and his associate and brother R. J. Considine, of the Paper House of Pennsylvania; President George W. Ward, of the D. L. Ward Company, and Leonard Peck, manager of the Paper House of Pennsylvania.

Moore & White Co. Installs Generator

Additional equipment added to the plant of the Moore & White Company, manufacturers of paper making machinery, with Philadelphia headquarters located at 17th and Lehigh Avenue, is that of a 225 KW motor generator set of the General Electric Company, supplied through the Quaker City offices.

West Virginia Pulp & Paper Co. Improvements

Frank E. Winslow, who covers the Eastern States from Pennsylvania as far south as Florida for the General Electric Company has within recent weeks equipped the West Virginia Paper Company with a 4000 KW Turbine. The new unit has been installed in the Piedmont, Va., mill of the Westvaco, and will provide high power operating facilities for the plant.

Kerr Paper Company Electrifies Mills

The entire plant of the Kerr Paper Company, of Downingtown, Pa., has been equipped with electrical operating devices, each of the paper making machines and other equipment now being supplied with individual motors. The Kerr company has been gradually adding to its electrical equipment throughout the past two years, the last of these having been installed this summer. With the improved electrical service the company is now able to maintain its production on a parity with the most modern of paper board mills. It is planned to increase the production of binder boards, suit case and trunk board, jacquard board and specialties of like character.

General Electric Units for Halifax Paper Corp.

Another southern paper making concern to have been supplied with electric devices through the Philadelphia headquarters of the General Electric Company is the Halifax Paper Corporation of Roanoke Rapids, N. C. The Halifax Corporation has installed Shartle Brothers Jordans with direct connected General Electric Synchronous Motors of 300 H. P., operated with automatic control system. Both the kraft mills and the sulphate pulp mills are now completely equipped with modern electrical operating devices.

Curtis & Bros. Mills Electrified

With the majority of paper mills turning to electrical power facilities of operation, the mills of Curtis & Bros., of Newark, Delaware, are now in line with the modernized paper making concerns which have adopted this improved and speedy service. Within the past two months the entire mills of the company have been equipped with electrical units. The paper making machines have been equipped with synchronous motors as well as the beaters and Jordans. All auxiliaries have been similarly electrified. The company is purchasing its power.

MacAndrews & Forbes Finds Broad Market in Boards

With the newest of paper boards to be developed by MacAndrews & Forbes now enjoying a broad market after its successful introduction early this summer the plant in south Camden is being operated at full capacity in order to catch up on the heavily oversold market for this latest of paper products—the Maftex. The Maftex is a special prepared paper board used for building purposes and is damp proof, sound proof and weather proof. It is produced on a specially constructed machine which was built for the purpose of making this newest of builders boards. The machine turns out 50,000 square feet per day in a solid sheet.

Valentine Heads Bagley & Sewall Co.

ALBANY, N. Y., September 24, 1927.—Charles W. Valentine, for a number of years vice president of the Bagley & Sewall Company, Watertown, builders of paper mill machinery, was elected president of the concern at a directors' meeting held in Watertown this week. Mr. Valentine succeeds the late Stuart D. Lansing, who headed the firm for many years and whose death occurred recently.

Edward S. Lansing, who has been assistant to the president for several years under his father's administration of the business, was elected first vice-president, succeeding Mr. Valentine. Clarence E. Kinne, secretary of the company, was promoted to be second vice-president by action of the directors.

Carrol Thompson, assistant treasurer, was named secretary and will also retain his position as assistant treasurer. The present treasurer, Charles D. Bingham, was re-elected.

The new president, Mr. Valentine, has been identified with the Bagley & Sewall Company for twenty-three years, going to the company first in 1904. After serving in minor positions he was elected secretary of the company in 1913 and two years later was made vice-president.

Edward S. Lansing, who was elected vice-president, joined the company in 1916 but left some months later to accept a commission in the army, serving two years with the A. E. F. After leaving the service he returned to the Bagley & Sewall Company and in 1921 was made assistant to the president.

Clarence E. Kinne has been associated with the company for thirty-four years and has been secretary for twelve years, being elected in 1915 to succeed Mr. Valentine when the latter was made a vice president.

Mr. Bingham, who was re-elected treasurer, is the oldest official of the company, his service covering a period of forty years. He has been treasurer of the concern for thirty years. Mr. Thompson, elected secretary, has been with the company since 1907 and for several years has been assistant to the treasurer.

Twenty-five Plants In Paper Merger

OAKLAND, Cal., September 22, 1927.—The new company that is to come into existence November 1, as the result of the merger of paper board properities of the Paraffine and Zellerbach companies, will consolidate 25 plants, according to information obtained by Sutro & Co.

The output of these plants is in excess of 500 tons of fiber board a day. The employes number more than 2500.

The plants that will come into the new organization include: Eight plants of the board and paper division of the Paraffine companies, six plants of the National Paper Products company, three plants of the Economy Paper division and eight plants of the Independent Paper Stock company.

J. D. Zellerbach will head the new corporation and D. H. Patterson Jr., now manager of the board and paper division of the Paraffine companies, will be vice president and general manager.

Toronto Paper Business Becomes More Active

Paper Mills Reported to be Generally Busy—Board and Box Plants Well Booked Ahead—Pulp Market Continues Rather Quiet—Quotations Practically Unchanged From Previously Recorded Levels—Future Outlook Promising

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 26, 1927.—Business in the paper trade is showing a little more activity toward the latter end of September and it is likely that the month, on the whole, will reveal a larger turnover than was at first anticipated. The fall fairs, the exceptionally warm weather and other factors interfered with trade early in the month but, during the last week or ten days, considerable improvement has been noted.

The demand for toilets, tissues and specialty lines keeps up very well. Board mills are all busy and have orders ahead in most cases for several weeks. Paper box plants are now more active than they have been for some months.

On the whole, the outlook for the remaining months of 1927 is considered very fair in all lines of the trade. While there will be no great rush in the movement of most stocks, still numerous orders, even if they are small, count much in the aggregate and help to round out each succeeding month with a respectable total. Prices in nearly all ranges hold firm and mills are quite busy. The pulp market is rather quiet and is one of the features of the paper industry at the present time which has not too encouraging an outlook.

Mr. Mead Reviews News Print Situation

The annual meeting of the Spanish River Pulp and Paper Company was held in Toronto recently, when the financial report for the past year was presented and directors elected for the coming one. The directors re-elected are: George H. Mead, George R. Gray, P. B. Wilson, C. H. L. Jones, T. H. Watson, T. Watson Sime, and J. G. Gibson. C. E. Read, of Ottawa, director, passed away recently, and J. G. Gibson has been appointed a temporary director in his stead until the nomination of a permanent director is obtained.

At a meeting of the directors held after the annual meeting, George H. Mead, of Dayton, Ohio, was re-elected president; George R. Gray, of Sault Ste. Marie, and C. H. L. Jones, of Sault Ste. Marie, vice-presidents; J. G. Gibson, of Toronto, secretary, and A. H. Chitty, of Sault Ste. Marie, has been elected as treasurer.

George R. Gray, vice-president, presided in the absence of President George H. Mead. The latter, in his annual report, pointed out that, while the excess capacity in news print at the present time is, approximately, 20 per cent, there had been no over production of paper during the past few months.

So long as the mills were operated in such a way as to avoid over production and accumulation of an excess tonnage, the situation would continue sound and healthy. Mr. Mead considered the present condition beneficial in that a premium is placed upon sound management and economic operation with a resultant decrease in manufacturing costs and enforcement of every possible saving.

The president added: "At the annual meeting two years ago I stated that, along with other commodities, I felt there would be a very gradual and moderate decline in the price of news print paper, and our experience has borne out this forecast. However, it now appears that in other industries a bottom price has been reached, and because of the very narrow margin of profit left, I feel the news print industry is in the same position.

"There will undoubtedly be further reductions in the cost of manufacturing, due to improved methods and better operations, but against this tendency the industry faces a continually rising wood cost and the necessity for large expenditures in the protection of its forests from fire and other destruction.

"The Spanish company's annual report seems to indicate that the company is in a good position to carry on for the next twelve months with every prospect of success."

Sale of Ontario Timber

The Department of Lands and Forests for Ontario has sold approximately 35 square miles of jack pine in the Sandy Lake area, district of Kenora, to Charles W. Cox, of Port Arthur, Ont., who is a well-known pulp wood contractor, handling large quantities of wood annually. In the new concession granted Mr. Cox, 10,000,000 feet of timber, board measure, are involved in the cutting rights. The purchase price was $16.50 per thousand. This price includes all Crown dues and fire protection charges. The timber is to be cut and removed, it is stipulated, by April 30, 1930. No summer operations are to be carried on between May 15 and September 15 in any year except by special permission of the Department.

New Board Factory Going Up

After negotiations of some weeks, the Dominion Envelope and Carton Company, Ltd., 130 Duchess street, Toronto, of which E. Newhall is the head, has purchased from the Toronto Harbor Commissioners a parcel of land valued at $164,000. The property, which the Dominion Envelope and Carton Company acquires, is on the west side of Cherry street, and extends westerly a distance of, approximately, 1,480 feet to the harbor, and has a water frontage of 300 feet. The average width of the site is 250 feet and it comprises 8¼ acres. The company proposes to erect a large paper board mill. The carton department of the firm will use a large portion of the product of the plant. The new mill when erected and running, will have a daily capacity of 125 tons of the cheaper grade boards.

James L. Carey, of Chicago, who is considered one of the foremost box board engineers, will have charge of the erection of the buildings and the plant. The buildings will be in the neighborhood of 700 feet in length. Without considering the other equipment, it will require 42 freight cars to haul the board machine from the factory. The machine is what is termed a seven-cylinder board machine, with 114 48-inch dryers, and from one end of the machine to the other will measure 390 feet. The Toms Construction Company, Ltd., of Toronto, has been awarded the contract for the building.

Notes and Jottings of the Industry

T. J. Allen, of Paper Sales, Ltd., Toronto, and Mrs. Allen returned recently from a holiday trip spent in the Kawartha Lakes.

The Toronto Carton Council will resume its bowling activities on October 1 when the usual winter series of notable events will be inaugurated.

T. D. Quirk, of the Peninsula Paper Company, Ypsilanti, Mich., was a business visitor to Toronto recently.

John Hewitt, Jr., of Paper Sales Ltd., Toronto, spent a few days lately on a visit to the pulp and paper mills in Eastern Canada.

L. Manchester, of the Regal Paper Box Company, Toronto, has returned home after a business trip to Ottawa and district.

The Department of Lands and Forests of Ontario is calling for bids for the right to cut red and white pine, jack pine and such spruce timber as is suitable for sawlog purposes, in the townships of Cassels and Riddell in the Temagami Forest Reserve. Tenders will be received up to October 24.

Paper Mill Executives Convene in Wisconsin

News Print Service Bureau Cost Accountants and Engineers, and Northwest Division of Superintendent's Association, Meet at Wisconsin Rapids — Consolidated and Nekoosa-Edwards Are Convention Hosts—Interesting Programs Arranged

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 24, 1927.—More than one hundred paper mill executives are meeting this week end at Wisconsin Rapids, Wis., where they have gathered for the annual fall meeting of the News Print Service Bureau Cost Accountants and Engineers, and the Northwest division of the Superintendent's Association of the Paper Industry. The Consolidated Water Power and Paper Company, and the Nekoosa-Edwards Paper Company are convention bouts, with Walter Mead and E. P. Gleason in active charge.

Events on the program include inspection of the mills at Wisconsin Rapids, Biron, South Side, Port Edwards and Nekoosa, and a series of technical conferences. The News Print Service Bureau has arranged a luncheon at the Bull's-Eye Country Club, and a dinner is to be served by the Consolidated company. At the latter gathering, W. F. Thiele and Ernest Belter will explain the design and operation of the new boiler plant of the Consolidated mill, declared the last word in such plants. The principal address will be by Arnold Pfau, hydro engineer of the Allis-Chalmers Company, Milwaukee, who is to give an illustrated lecture on water power development in the United States.

Other events are a chicken chowder luncheon at the cottage of J. E. Alexander, of the Nekoosa company, at Nepco Lake, a program on paper mill operation at Port Edwards, and a dinner served by the Nekoosa-Edwards Company, followed by a meeting of the superintendent's association. The guests also have been invited to play golf Sunday at the Bull's-Eye Country Club.

Peshtigo Sale Again Postponed

Sale of the assets of the Peshtigo Paper Company, Peshtigo, Wis., at a receiver's sale, has again been postponed. Disposal of the plant was deferred several times and was to have been held this month. Judge William B. Quinlan, of the Marinette County Circuit Court, now has decided that the sale will be made on October 24. The mill is valued at more than $2,000,000 and was placed in the hands of a receiver following bankruptcy proceedings instituted by banks of Milwaukee, Wis., who were holders of the bonds. The mill is running at full capacity under the receivership of P. M. Allen, formerly of Detroit, and has ample orders on its books.

Riverside Mill to Be Enlarged

An addition costing $20,000 will be made to the plant of the Riverside Fibre and Paper Company, Appleton, Wis. The boiler and finishing rooms will be enlarged by adding a three story unit of steel, brick and concrete, 66 feet wide and 78 feet long. The contract has been awarded to C. R. Meyer & Sons Company, and construction is to start immediately.

New Paper Mill Inventions

Two paper mill inventions of men located at Green Bay, Wis., have brought patent awards at Washington. One is a paper converting machine designed by Clifton O. Gammell, who has assigned a half interest to A. L. Nelson. The other is an apparatus for creping paper, the invention of Austin E. Cofrin.

Foremen's School Sessions

Foremen of paper mills at Appleton, Wis., and those of allied industries as well, will again take part this season in a foremen's school. The first one of its kind was held last fall and winter with such good success that the idea is to be repeated. Seven meetings will be held. Five will be general sessions for all industries, and two will be of a sectional nature. Speakers who are experts along industrial lines will be the speakers. At the close of the series, a commencement banquet will be held and certificates given all who have attended regularly. Among those assisting with the arrangements are H. G. Boon, of the Kimberly-Clark Company; C. K. Boyer, of the Interlake Pulp and Paper Company; Ernest Morse, of the Hayton Pump and Blower Company, and John Watson, of the Wisconsin Wire Works.

Paper Making Classes Planned

Classes in pulp and paper making will be started in all cities of the Fox River Valley and at Marinette, Wis., during the first ten days of October, according to plans of the vocational schools of various cities. The instruction is being given in co-operation with the paper mills and the industrial commission. The instructor, Arthur W. Bouffard, of Rumford, Me., has arrived and is organizing the classes with the assistance of H. G. Noyes, state supervisor of this branch of education.

Among the subjects to be taught paper mill workers in the evening classes are: Characteristics and sources of pulp wood; paper making fibers other than wood; preparation of pulp wood; manufacture of mechnical pulp, and sulphite, soda and sulphate pulp; bleaching, sizing, colors, pigments, preparation of rags, beating, fourdrinier machines, cylinder machines, paper finishing and testing, power, chemistry, electricity, steam and water

Baled Straw Destroyed by Menasha Fire

An all night fire last week destroyed large quantities of baled straw at the plant of the Menasha Paper Mills, Menasha, Wis. The bales had been shipped in in large quantities for the manufacture of straw board and it is believed that either spontaneous combustion or sparks from a locomotive ignited the piles. It took fifteen streams of water to keep the fire from spreading to the mill buildings and a battle of many hours to put out the fire. No estimate has been announced of the loss. The company, through Norman E. Brokaw, manager, presented the Menasha fire department with a check for $100 for its pension fund in recognition of the work done by the men.

Neenah Staff Softball Champions

Employees in the office of the Neenah Paper Company, Neenah, Wis., have been proclaimed champions of the Neenah softball league. Games have been played all summer long with other teams made up of business men. The final contest for the title brought victory for the paper mill group.

Jordan-Bergstrom Wedding Announced

Announcement has been made at Neenah, Wis., of the marriage of Miss Alice Bergstrom, daughter of Mr. and Mrs. George E. Bergstrom, to Raymond Wood Jordan, Monterey, Calif. The bride is a grand-daughter of J. A. Kimberly, of Redlands, Calif., one of the founders of the Kimberly-Clark Company, Neenah.

Beach & Arthur To Handle Paper

INDIANAPOLIS, Ind., September 26, 1927.—Articles of incorporation have been filed with the secretary of state of Indiana by Beach & Arthur, Inc., of Indianapolis, Ind. The corporation has an initial capital stock of $100,000 and is formed to "maintain, conduct and manage the business of manufacturing, producing, purchasing, selling and dealing in any and all kinds of paper." The incorporators are Richard W. Beach, William H. Arthur and David H. Jennings.

CHEMICAL INDUSTRIES SHOW

(*Continued from Page 17*)

excellent service in furnaces heated by electricity. They are more durable than fire clay and their high heat conducting properties bring the furnace and work up to temperature more quickly. High thermal conductivity is a characteristic of silicon carbide.

A great many special shapes for unusual requirements have been made. Crystolon Muffles are used in electric heat treating.

Norwood Engineering Company

Norwood Water Filters are shown at the exhibit of the Norwood Engineering Company, of Florence, Mass. The Norwood Water Filters always deliver clean, pure, sparkling water and are greatly appreciated in the paper mills where they are installed.

Oliver Continuous Filter Co.

At the booth of the Oliver Continuous Filter Company, of 503 Market street, San Francisco, Cal., the uses of the Oliver Continuous Automatic Vacuum Filters, Horizontal Continuous Filter Tables, Olivite Acid Pumps, Oliver Pulp Washer, and other products of this renowned house are ably demonstrated The Oliver Pulp Washers are showing very gratifying results on paper mill operations and are becoming universally adopted.

The use of the Oliver for the continuous automatic washing of wood pulp effects enormous savings as compared to either the pan washing or diffusion method. A thoroughly washed cake is continuously discharged and clean black liquor is delivered to the evaporators at density less than 1 degree below that of cook liquor. Pulp loss is eliminated, bleach consumption lowered, the amount of stock in process of washings is greatly reduced, together with savings of 60 per cent in labor and 75 per cent in floor space. All operations are in full view at all times.

Philadelphia Quartz Co.

The Philadelphia Quartz Company, of Philadelphia, has on display its different grades of silicate of soda. These include liquid, solid and powdered silicates. One attraction is the poster, The Silicate of Soda Tree, which charts the uses of silicates. Doucil, the water softening material, is displayed here, too.

Booths 285 and 286 on the mezzanine floor to the right of the elevators provide a meeting place for all interested in silicates of soda. Both sales and technical representatives are in attendance.

W. H. Buxton, Jr., is in charge, assisted by James G. Vail, Chemical Director; Dr. William Stericker, John D. Carter, J. P. Elkinton, E. A. Russell, H. M. Fricke, J. R. Jones, R. C. Brown, J. C. Russell and C. H. Jeglum.

Shepard Electric Crane & Hoist Co.

One of the most ambitious exhibits at the Show is that of the Shepard Electric Crane and Hoist Company, of Montour Falls, N. Y. A huge Shepard Crane is shown in operation. All Shepard cranes, hoists, winches and similar equipment are basically the same in design. They have the Shepard "Balanced" Drive, which consists of a double train of machine cut spur gears, driving at two points diametrically opposite, thus dividing the work among double the number of gear teeth. The stresses are, therefore, perfectly balanced and there is no pressure imposed upon the shaft bearings.

Gearing is enclosed in tight metal housings and operates in baths of oil, which provide thorough, automatic lubrication. This "Balanced Drive" when enclosed and running in oil, naturally, is very efficient, durable and reliable to an extent not even approximated by any other construction.

Colored panels showing installations in various industries adorn the walls of the booth, including several reproductions of installations in leading paper mills.

Texas Gulf Sulphur Co.

A great center of attraction at the Exposition is the beautiful exhibit of the Texas Gulf Sulphur Company, of 41 East 42nd street, New York. Here is displayed an artistic animated and illuminated picture of the Golf Hill, Texas, sulphur mine in operation, showing the complete process of manufacturing sulphur. This sulphur mine is the largest known deposit of its type. This wonderful panorama is the work of the Seen-in-Action Company.

The W. S. Tyler Co.

A large and comprehensive exhibit of wire cloth is shown at the booth of the W. S. Tyler Company, of Cleveland, Ohio. Delays of production in hundreds of plants have been saved by first aid shipments of woven wire screen from the Tyler organization. The wire employed in the screen is specially prepared with a view of producing long life. The samples of wire cloth on display include Fourdrinier cloth.

Hum-Mer Electric Screens, which are also becoming widely adopted in the paper mills, are also exhibited at this booth.

United Filters Corp.

One of the most important exhibits in the Chemical Industries Show is that of the United Filters Corporation, of Hazleton, Pa. Of special interest to the paper industry is the Pulp Type American Continuous Filter which has already been adopted by a large number of leading paper mills in the United States and Canada for eliminating stock losses in white water.

The American Filter shows remarkably high efficiencies on recovery of fiber from white water. All of the fiber is recovered from chemical pulp white water and even when handling ground wood white water, the filtered effluent contains an insignificant quantity of solids, principally wood flour. Good recoveries are also obtained on white waters.

U. S. Rubber Co.

Hard rubber products and tank and tank car linings are featured at the booth of the United States Rubber Company, New York. The successful development and perfection of a process of applying a protective coating of soft rubber to metal and wood surfaces is one of the most important contributions of the United States Rubber Company to the chemical industries.

By means of this new process a "cured" or vulcanized rubber lining—acid-proof, tough, durable, and abrasion resisting—is permanently applied directly to the metal surfaces of tanks, containers, tank cars, vats, etc., etc. Extensive tests in laboratory and in actual service prove conclusively that the "U.S." Vulcanized Rubber Lining is more economical and effective than the usual unvulcanized or "Para" type of lining. The surface will not impart color to the chemical stored.

U. S. Testing Co.

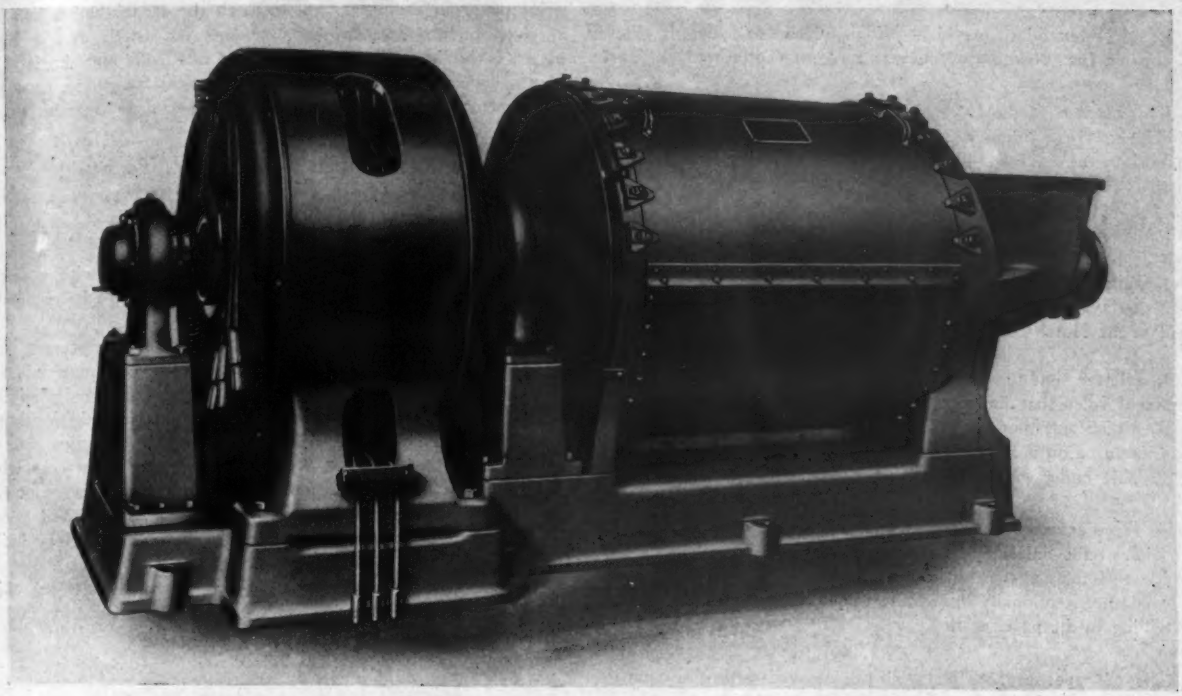
The United States Testing Co., Inc., New York, are maintaining a booth at the Chemical Show to demonstrate the facilities of the organization for making tests, analyses and sampling. For the paper and pulp industry, the laboratories of the U. S. Testing Company provide microscopical examination, chemical analyses, and physical tests of paper under standard conditions of humidity and temperature by official standard methods of the Technical Association of the Pulp and Paper Industry, also sampling and moisture determination in woodpulp.

Westinghouse Electric & Mfg. Co.

World-Famous Westinghouse products are attractively displayed at the elaborate booth of the Westinghouse Electric and Manufacturing Company, of Pittsburgh, Pa.

Demonstrations are given to the many visitors to this exhibit of the effect of stressed transparent materials on Polarized light. The Photo Glow Tube and Knowles Grid Glow Tube are also shown.

Many visitors are also interested in the motor starting and safety switches which are explained by the courteous staff. Other Westinghouse products that come in for attention are the Westinghouse Floodlight Projector and the Inertaire Transformer.



IMMEDIATE SAVINGS

The Bird Pulp Screen's savings in power, maintenance and floor space and increased output of first quality pulp per screen are too important to overlook.

Pulp makers are replacing old type screens with the Bird Pulp Screen in order to make these savings effective at once.

May we show you what the Bird Pulp Screen can save you?

BIRD MACHINE CO.
SOUTH WALPOLE
MASSACHUSETTS

The Bird Pulp Screen

HAUG DESIGN

1302

New York Trade Jottings

L. M. Alexander, president of the Nekoosa-Edwards Paper Company, Inc., Nekoosa, Wis., was a recent visitor to New York.

* * *

John Stadler, of the Lake St. John Power and Paper Company, Ltd., who are building a 210 ton news print paper mill at Mistassani, in the Lake St. John district, has been visiting his friends in the local paper industry.

* * *

The regular Fall Meeting of the News Print Service Bureau will be held in New York, October 18-19. The cost accountants and engineers are to meet at the Canadian Club, Hotel Belmont, on Tuesday, October 18, and the general Bureau Meeting will be held at the Hotel Commodore on Wednesday, October 19.

* * *

In a letter sent to the New York collector, the Treasury Department rules that imported sheets of paper composed of straw over fifteen one-thousandths of an inch in thickness, whether manufactured on a Fourdrinier machine or multicylinder machine, is dutiable under paragraph 1302, tariff act of 1922.

* * *

The regular weekly luncheon and meeting of the New York Division of the Salesmen's Association of the Paper Industry was held last Monday at the Canadian Club, New York. Those present enjoyed an exceptionally interesting discussion on business matters pertaining to the paper trade.

* * *

Rolls of paper are capable of being marked with the country of origin, the United States Customs Court holds in overruling a protest of Burstein & Sussman. An additional duty of 10 per cent was imposed on this paper for non-compliance with the tariff law. This extra assessment is upheld in an opinion by Judge Adamson.

* * *

Arthur T. Upson, of the International Lumber Manufacturers Association, Washington, D. C., who was formerly on the staff of the Forest Products Laboratory, Madison, Wis., is in New York this week, making arrangements to open a branch office, of which he will be in charge, to further the organization's campaign for wood utilization. Branch offices are also to be opened by the association at Chicago and other important centers.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, leaves New York next Saturday for Chicago. On October 4 he is scheduled to address the Advertising Club, at Lafayette, Ind. Mr. Kellogg plans to attend the fall meeting of the Technical Association of the Paper Industry, at Middletown, Ohio, on October 5, while on October 6 and 7 he is to take part in the Eighth Annual Convention of the American Trade Association Executives, of which he is a vice president, at West Baden Springs, Indiana.

* * *

Dr. Hugh P. Baker, secretary of the American Paper and Pulp Association, was in Washington the latter part of last week conferring with government officials on various problems of interest to the trade. It is understood, among other things, that he took up with officials of the Department of Commerce the matter of getting a special Paper Trade Commissioner appointed similar to the Commissioners which are now in the employ of the Department abroad for various other commodities. It is believed that the Department officials favor this. The proceeding to obtain the services of a paper man abroad to foster foreign trade will be the inclusion in the Department of Commerce appropriation bill for next year for that item. It is understood, in this connection, that in the near future Dr. Baker will file a more or less formal communication with the Department urging the appointment of such a man.

The Great Atlantic Paper Company, 149 Wooster street, New York City, one of the largest converters and distributors of news print paper in the East, announce to the trade that it has just received one of the largest shipments of strictly No. 1 Kraft paper, in jumbo rolls, to be converted into rolls and sheets at its plant which has a capacity of 15 tons per day, so as to enable their patrons to get better deliveries on special and standard sizes.

Supreme Paper Products Co. To Build

INDIANAPOLIS, Ind., September 26, 1927.—W. H. Willen of the Superior Paper Products Company at Fairmount, Ind., has announced that work has started on the erection of a new building by his company, which will be 50 by 100 feet, with a double deck covering half of the structure, the building to be completed as quickly as possible.

The addition will be located on the north of the present plant and is to be used largely for the storage of raw materials and finished products. This step will release the entire main building of the plant for manufacturing purposes and two additional machines have been ordered to augment the present equipment.

The firm, which suffered a disastrous fire early last year when their building formerly of non fire proof construction was destroyed and also several carloads of material and finished orders awaiting shipment, immediately purchased another factory building and resumed operations as quickly as possible.

The capacity of the plant is to be increased at least one third at this time with further increases made in the production end of the business shortly.

Herbert I. Wallace Dies Suddenly

BOSTON, Mass., September 27, 1927.—Herbert I. Wallace, operating executive of the Fitchburg Paper Company, Fitchburg, Mass., until five years ago, and one of the leading paper manufacturers in New England, died suddenly at his home, 65 Prospect, street, that city, Sunday morning, September 25, aged 71.

Mr. Wallace had been in failing health for several years. Until recently he was vice-president of the Fitchburg and Leominster Street Railway.

He was trustee of the Wallace Public Library, Fitchburg, and also a trustee of the Ingalls Memorial Library, Rindge, N. H. Both of these buildings were gifts of Mr. Wallace's father. He was founder of the Fitchburg Choral Society.

A widow, Mrs. Alice L. (Geldert) Wallace; two sons, Frederick and Robert S.; a daughter, Mrs. Sophie W. Nolan of Springfield, Mass.; a brother, George R. Wallace; and nine grandchildren are living.

The funeral was held at his late home at 2 o'clock this afternoon. Burial was in Laurel Hill Cemetery.

Bids for Government Paper

WASHINGTON, D. C., September 28, 1927.—The Government Printing Office has received the following bids for 34,500 pounds of 38x48—115 of M.F. book paper: Bryant Paper Company, at 10.6 cents per pound; American Writing Paper Company, 11.25 cents; and Whitaker Paper Company, 10.5 cents.

The Government Printing Office has received the following bids for 50,000 sheets of 12x18 manila tissue paper: Mathers-Lamm Paper Company, at 72 cents per M; R. P. Andrews Paper Company, at 57 cents, 60 cents and $1.45; Whitaker Paper Company, 49 cents; William Mann Company, $1.80; Wilkinson Brothers Company, $1.05, $1.04, $1.00, 98 cents.

For 25,000 4⅛x9½ white window envelopes: U. S. Envelope Company, at $1.74 per M; Union Envelope Company, $1.57; U. S. Paper Goods Company, $1.87; R. P. Andrews Paper Company, $2.27, $2.14, $2.20; Mathers-Lamm Paper Company, $2.05; and Oles Envelope Corporation, $1.90.

KENWOOD TANNED FELTS

are treated by PATENTED chemical processes TO COUNTERACT the deteriorating effects of water, alkali and acid. This treatment results in a LONGER MAINTENANCE of the natural elasticity and resilience of the wool fibre — BETTER RUNNING PERFORMANCE — HIGHER WATER REMOVAL and QUICKER FUNCTIONING.

An explanation of this tanning treatment and its results has been issued in

KENWOOD BULLETIN No. 29

A reprint of this bulletin will be mailed on request

The term "TANNED" refers to the treatment and in no way applies to color

F. C. HUYCK & SONS

KENWOOD MILLS
ALBANY, N. Y.

KENWOOD
WOOL PRODUCTS

KENWOOD MILLS LTD.
ARNPRIOR, ONTARIO

Power Plant Section

Reducing Power Costs Through Unit Treatment

Conducted by REGINALD TRAUTSCHOLD, Consulting Engineer

Turbine Drive Practice Stabilizes Heat Balance

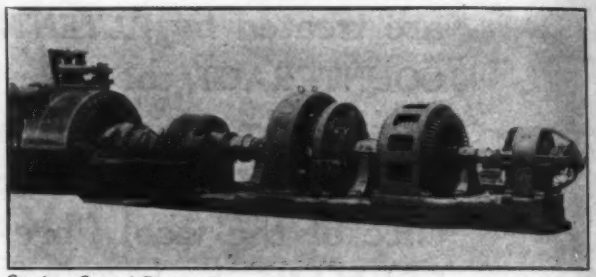
In an industry where so much depends upon continuous operation, where minimum attention to prime and auxiliary movers is so desirable and where steam as well as power expenses enter so largely into the cost of the finished product, it is not at all surprising that the steam turbine should have established itself as the standard power unit in many pulp and paper mills. This, in spite of the fact that there are also many instances where other types of power units are giving admirable service and building up enviable records.

It is the steam turbine, largely, which has made possible at minimum expense the use of the less costly and more efficient high speed electric motor, often through direct connection and when this is not feasible, through the agency of the highly efficient speed reducers which have been evolved for such service. It is the steam turbine, also, which furnishes the cleanest supply of process steam, virtually free from oil content, and it is the steam turbine which most readily permits of the extraction of live steam at any desired pressure. In fact, the steam turbine has so many characteristics which can be economically and effectively utilized in caring for the exacting power and steam requirements of the paper mill that a consideration of this efficient prime mover needs resolve itself largely into a descriptive portrayal of successful steam turbine applications rather than an analysis of costs and comparable operating statistics.

Courtesy De Laval Steam Turbine Co.

THE 500 HORSEPOWER SYNCHRONOUS MOTOR AT THE EXTREME RIGHT SENSITIVELY BALANCES THE STEAM SUPPLY TO THE STEAM REQUIREMENTS OF THE TURBINE UNIT AT THE LEFT, CROWN WILLAMETTE PAPER COMPANY, WEST LINN, ORE.

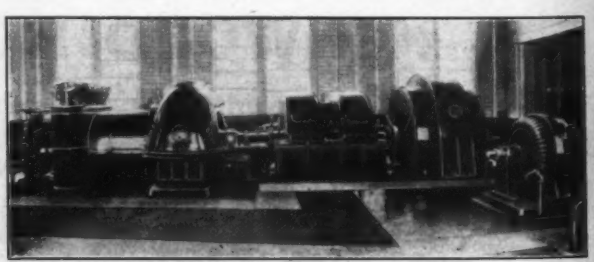
Compared with other prime movers, steam turbines require much less floor space for their accommodation, considerably lighter foundations, less attendance and, in operation, avoid the drawbacks of reciprocating masses and incident vibrations. They have extreme overload capacity, possess increased reliability on account of their simplicity of construction and are subject to easy and sensitive regulation. Inherently, their construction is favorable to high steam pressures, the use of superheat and high vacua and operating economies as high as those of the best steam engines



Courtesy General Electric Co.

FLEXIBLE NON-CONDENSING TURBINE DRIVE INSTALLED AT THE GREAT NORTHERN PAPER CO. PLANT, MILLINOCHET, ME.

are attained for moderate powers and much better economies with units of larger sizes and greater powers. These are all important considerations in paper mill service, even the superiority of the units in condensing operation, now that the practice of steam



Courtesy General Electric Co.

4,000 KILOWATT EXTRACTION TYPE GEARED TURBINE AT THE VIRGINIA PULP & PAPER CO., COVINGTON, VA.

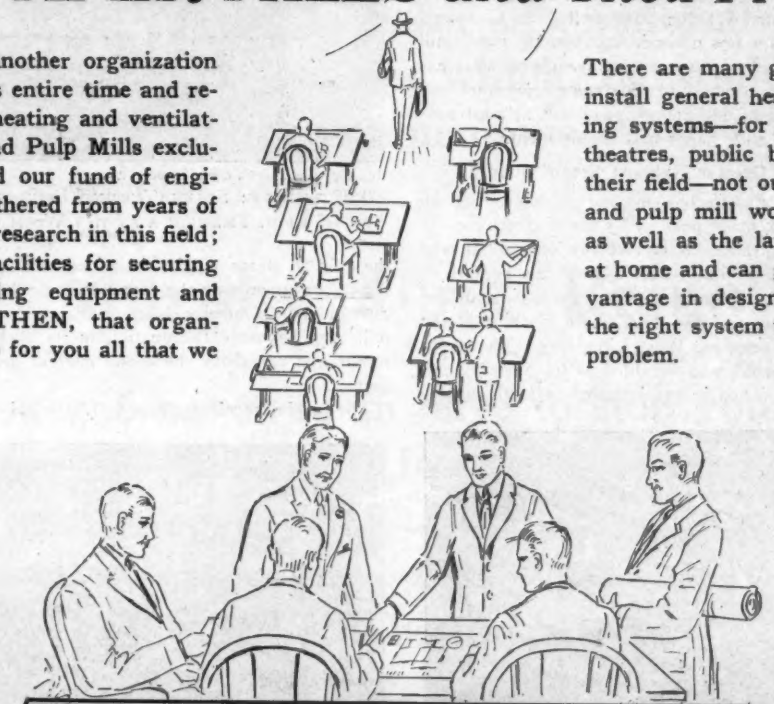
extraction, or turbine bleeding, is being successfully conducted at some of the newer and highly efficient paper mill power plants.

Extraction of live steam at any desired pressure is not limited, however, to condensing turbine operation, for it is quite feasible to bleed non-condensing units at the first or any intermediate stage

Plant	Equipment	Investment Entailed	Major Improvements Realized	Estimated Annual Saving	Yearly Yield on Investment
United Paperboard Company, Peoria, Ill.	200 hp. Moore steam turbine—belted drive to digesters, exhaust steam used for process heating.	$34,000	Compact arrangement, low cost of upkeep, avoidance of interruptions.	$4,800.00	14.1 per cent
Kalamazoo Vegetable Parchment Co., KaKlamazoo, Mich.	2—1 250 kw. G. E. extraction type turbine-generators.	28,000	Economies in process steam and by-product electric power supplies.	12,804.48 to 70,536.96	45.8 per cent 252.3 per cent
Algonquin Paper Corporation, Ogdensburg, N. Y.	700 hp. Moore steam turbine—paper machine drive.	8 800	Simplified drive, freeness from trouble, excellent speed control.		
Pejepscot Paper Company, Brunswick, Me.	200 kw. high back pressure Moore steam turbine with generators.	8 000	Steam supplies for dryers utilized for power.	2,400.00	33.3 per cent

An Organization That LIVES and WORKS~Every Minute of Every Day With PAPER MILLS and Their Problems

IF there *was* another organization that confined its entire time and resources to the heating and ventilating of Paper and Pulp Mills exclusively; that had our fund of engineering data gathered from years of experience and research in this field; that had our facilities for securing material, building equipment and installing it;—THEN, that organization could do for you all that we can do.



There are many good concerns that install general heating and ventilating systems—for churches, schools, theatres, public buildings. That is their field—not ours. But on paper and pulp mill work—the small job as well as the largest one—we are at home and can give you every advantage in designing and installing the right system for your particular problem.

Let Our Experience Save you Money.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street CHICAGO | Main Office - 30 E. 42nd Street NEW YORK | 1117 Tacoma Ave. TACOMA, WASH.

ROSS ENGINEERING OF CANADA, LIMITED
New Birks Bldg.—Montreal

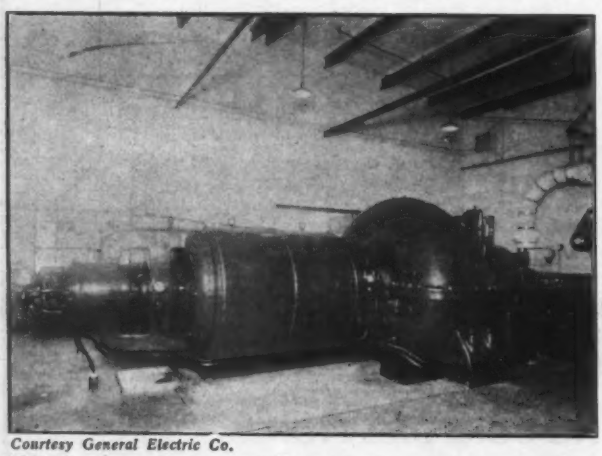
ROSS SYSTEMS
HEATING—VENTILATING—DRYING

when desirable. In fact, the flexibility of the steam turbine so far as the furnishing of a process steam supply of any desired quality is concerned is unexcelled. Add to this, the fact that steam turbines can be operated quite profitably against almost any degree of back pressure and the problem of adequate and proper process steam supply, which has heretofore limited and controlled the use of paper mill prime movers in large measure, can now be met best with a suitable steam turbine installation.

The claim that a steam turbine can be operated profitably with almost any degree of back pressure may sound extravagant to paper mill superintendents, but one prominent turbine manufacturer reports building 5,000 kilowatt units to operate with a steam pressure of 375 pounds per square inch at the turbine throttle and against a back pressure of 140 pounds per square inch absolute. An installation of a turbine, also a 5,000 kilowatt unit, exhausting against a back pressure exceeding 100 pounds gage has been in successful, meaning profitable, operation for some four years. Compared to turbine back pressures of 25 pounds gage at the power plants of the Nekoosa-Edwards Paper Company, Port Edwards, Wis., and the Brown Company, Berlin, N. H., up to 30 pounds at the plant of the Warren Manufacturing Company, Newark, N. J., and perhaps a few other installations in paper mill power plants where these back pressures have been somewhat exceeded, all of which are considered distinctly high pressure exhaust installations, a record of 140 pounds gage will at least provide for almost any conceivable paper mill requirements.

Additional Load for Greater Exhaust Steam Supply

Additional load is also an effective manner of bolstering up the supply of exhaust steam, made possible by the distinctive overload capacity of the steam turbine. A noteworthy example of how successfully an efficient and profitable heat balance can be arrived at in this way is that of the recently modified graduated turbine drive for the separate sections of the large paper machine at the Crown-Willamette Paper Company, West Linn, Ore. The paper machine, it will be remembered, was heralded as the fastest news print machine in the world when it was installed in 1920, capable

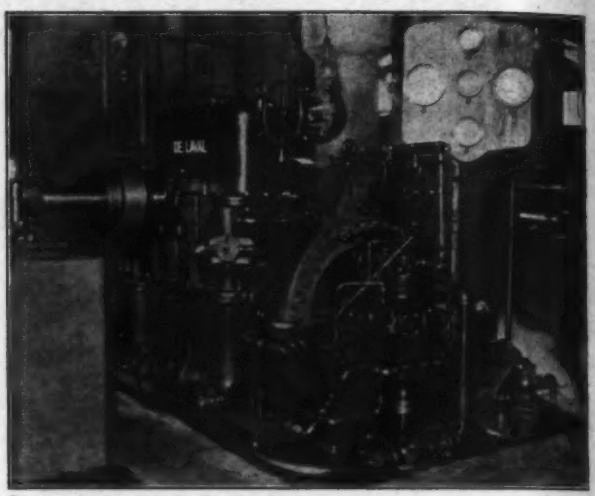


Courtesy General Electric Co.

2,000 Kilowatt Extraction Turbines Operating at the Mead Fibre Company, Kingsport, Tenn.

of producing paper at the then unprecedented rate of 1,000 feet per minute.

As originally installed, a steam turbine drives, through a double helical gear (mill type) speed reducer, a relatively large direct current generator, the output of which supplies the energy for the eight 100 horsepower motors actuating the couch roll and wire, four press rolls, two dryer sections, and the calender stack and one 30 horsepower motor driving the reel of the paper machine. It was found, however, that the generator supplying these nine direct current motors did not impose sufficient load on the geared turbine for it to exhaust sufficient steam for heating the dryer rolls of the paper machine adequately. To make up the deficit in exhaust steam supply, the simple expedient of coupling a 500 horsepower synchronous motor to the end of the direct current generator shaft and connecting this additional unit into the alternating current power circuit of the mill was resorted to. In imposing the extra load on the steam turbine needed for augmenting

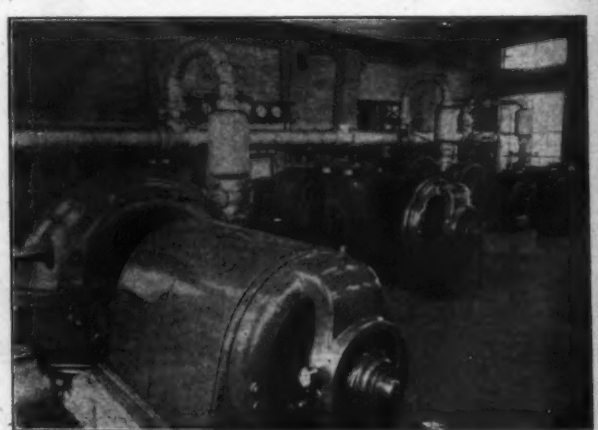


Courtesy De Laval Steam Turbine Co.

400 Horsepower Steam Turbine Driving Machine Lineshaft at 425 r.p.m. Through a 7.7 to 1 Worm Gear Speed Reducer.

the exhaust steam supply, the added unit functions as a generator, but if for any reason the demands for exhaust steam drop, so that a reduction in turbine load is advisable, the alternating current unit may be made to function in its capacity as a synchronous motor and can drive the direct current generator in whole or in part.

The turbine receives steam at 175 pounds gage, with 100 degrees



Courtesy General Electric Co.

2,000 and 1,500 Kilowatt Condensing Extraction Type Steam Turbines at the Gardner-Harvey Co., Middletown, Ohio

superheat, and exhausts at from 5 to 15 pounds gage back pressure. Although the amount of steam required for drying the paper varies considerably, the flexibility of the remodeled installation is so adaptable to the existing conditions that excellent adjustment of steam supply to the steam requirements is now easily secured.

Non-Condensing Turbine Development

A turbine drive which gives considerable promise of meeting with much favor in the paper industry, offering great flexibility of operation, as it employs the non-condensing principle with

It's Expensive Junk

--the foreign material in your beater

Figure it out. What does the removal of this junk cost you each year? How much time is lost stopping the beater to remove all the foreign material? It's a substantial amount and one which you would like to eliminate. And—this tremendous PROFIT LEAK can be stopped. Install

A Murphy Junk Remover

and you will never again have to stop your beater to remove all junk and foreign material, large or small, continuously without fuss or bother. It will keep the bottom of your beater absolutely clean—will give you more and better stock.

Drop us a card—we will have one of our engineers fully explain a Murphy Junk Remover to you and prove how it will save money for you. Of course there will be no obligation.

The Griley-Unkle Engineering Co.

Fort Wayne Indiana

"The Murphy Junk Remover Keeps the Bottom of the Beater Absolutely Clean"

which paper mills are much more familiar than they are with condensing practice, was installed a year or two ago at the plant of the Great Northern Paper Company, Millinocket, Me. Like the remodeled installation at West Linn, it is a compact and efficient unit assembly, also of elongated arrangement.

Steam is supplied to the turbine at 125 pound gage pressure, without superheat, and is exhausted against 10 pound gage back pressure. The turbine operates at 3,600 r.p.m. and drives a 500 kilowatt direct current generator through a mill type speed reducer having a 4½ to 1 speed ratio. Connected to the other end of the direct current unit shaft is a 300 kilowatt alternating current generator to which is also attached a 35 kilowatt exciter. It is obvious that with such an assembly, sensitive and accurate balance of steam and power requirements can readily be effected.

Somewhat less spectacular, but highly effective, are the non-condensing turbine installations at the plant of the Scott Paper Company, Chester, Pa., where a 1,500 kilowatt, 60-cycle, turbo-generator operating on 250 pound steam carrying 160 degrees of superheat exhausts against 15 pounds gage pressure, which is maintained by an automatic back pressure regulator; and at the mill of the St. Regis Paper Company, Syracuse, N. Y., where a geared turbine drives a 350 kilowatt, direct current, generator with a 35 kilowatt attached exciter, operating on 150 pound steam without superheat and exhausting against 20 pound gage back pressure. At the Ontario Paper Company, Thorold, Ont., four geared turbines of the non-condensing type drive paper machines through pulley and belt connections, after an initial turbine speed reduction through the speed reducer has been made. Two of the turbines are of 500 horsepower rated capacity and operate on 120 pound steam pressure and exhaust against 6 pound back pressure. The other two are rated as 650 horsepower units, designed for 145 pound gage initial steam pressure with 100 degrees of superheat, and exhaust against 2 pound gage back pressure.

Recent installations of non-condensing turbine units have also been made at the plants of the Bryant Paper Company, Kalamazoo, Mich.; Eagle Paper Company, Joliet, Ill.; Itasca Paper Company, Grand Rapids, Minn.; Marathon Paper Mills Company, Rothschild, Wis.; Wausau Paper Mills Company, Brokaw, Wis.;

Courtesy General Electric Co.

3,000 Kilowatt Curtis Steam Turbine at the Eddy Paper Co., Three Rivers, Mich.

and Kieckhefer Container Company, Belair, N. J. These installations are simply mentioned to indicate the popularity of such prime mover units and the present tendency toward steam turbine drives in paper mills all over the country. These particular installations have also attracted considerable attention.

Pertinent was also the decision of W. C. Hamilton & Sons, Miquon, Pa., to electrify its entire plant when one of its steam driven machines, driven through a complicated system of line shafting, broke down once too often. The remodeling entails the installation of a 1,500 kilowatt, non-condensing, turbine driven generator to supply power to four motor-driven mills, the paper machines driven by 80-horsepower adjustable speed, direct current, motors, the Jordans by individual 150-horsepower, direct connected, synchronous motors, and a number of general purpose

Courtesy General Electric Co

2,500 Kilowatt Steam Turbine at the Plant of the Kalamazoo Paper Co., Kalamazoo, Mich.

10-horsepower induction motors. The non-condensing type of steam turbine was selected for the avowed reason that the mill utilizes a large quantity of process steam.

Suitable Condensing Turbines for Paper Mill Service

While this choice was doubtless an admirable one, great progress has been made in condensing steam turbine construction with the view of making them available for such duties as are encountered in paper mill service and to secure under such conditions the somewhat higher efficiencies obtainable with superheated steam at high pressure and the use of as near vacuum exhaust as feasible.

Courtesy General Electric Co

6,000 Kilowatt Condensing Turbine Serving the Champion Coated Paper Co., Hamilton, Ohio.

Steam for process requirements is obtained from such units by extraction, bleeding, at any desired pressure stage.

An installation of these extraction type steam turbines for generating electric power and bleeding steam for paper drying at the plant of the Kalamazoo Vegetable Parchment Company, Kalamazoo, Mich., saves a minimum of $12,804.48 per year and a maximum of $70,536.96 over other methods of operation. Power is generated at two plants. In one mill, variable speed engines are used to drive the paper machines, one rated at 200 horsepower

And Now 10 more — for Celotex—A total of 16

One of the No. 2 Brownhoist Creeper Cranes at the mills of The Celotex Co., New Orleans, La.

Performance Proved Their Worth

The performance of Brownhoist cranes is so universally satisfactory that owners in most cases standardize on Brownhoists for their additional equipment.

Recently The Celotex Co., of New Orleans, La., purchased their sixth No. 2 Brownhoist creeper crane. These repeat orders are conclusive evidence of the worth of these cranes as economical material-handling machines.

These six creeper cranes are employed in handling baled bagasse, or sugar cane fibre, the raw material from which Celotex insulating lumber is manufactured.

The satisfaction of this company with Brownhoist cranes is typical of hundreds of industrial plants, railroads, mines and contractors in all parts of the world.

Our experience in solving the handling problems of scores of industries will be helpful to you. Let us show you what a Brownhoist will do on your work.

The Brown Hoisting Machinery Co., *Cleveland, Ohio*

Branch Offices: New York, Chicago, Pittsburgh, San Francisco, New Orleans

BROWNHOIST

MATERIAL HANDLING MACHINERY

The Celotex cranes are 10-ton capacity creeper models, the first six being steam and the last ten gas operated.

This No. 2 Brownhoist is built for steam, gas engine or electric drive, and is mounted on railroad or creeper trucks.

This advertisement, first used three years ago, is reprinted to again emphasize the dependable year-in and year-out performance of Brownhoist cranes as evidenced by the surest method of judging—repeat orders.

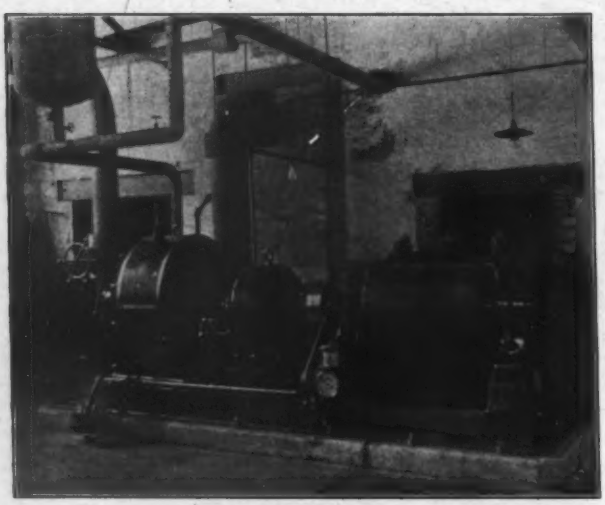
BROWNHOIST

GOOD MATERIAL HANDLING MACHINERY

and the other at 300 horsepower. All the exhaust steam from these engines is used for paper drying, as well as 11,000 pounds of steam an hour extracted from the 1,250-kilowatt turbine generator carrying the electrical load of the mill. This latter steam is employed at 5 pounds pressure.

In the second mill, the paper machines are driven by sectional motor drives and the electrical load of the mill, including that of these paper machine motors, is carried by two 1,250-kilowatt turbine-generators. The turbines drive their generators and at the same time supply some 22,000 pounds of process steam an hour, at 5 pounds pressure, by extraction from their first steam stage. This quantity of steam suffices for all drying requirements of the mill. The extraction of live steam under considerable pressure also permits securing approximately 1,630 kilowatts of electric power through steam pressure reduction at practically no expense.

If the paper machines in the second mill were driven by variable speed engines, as in the first mill, 500 horsepower would be required at not less than 35 pounds of steam per horsepower-hour. This could furnish only 17,500 pounds of steam an hour suitable for drying purposes, costing $6.29 per hour for a really somewhat inadequate supply. An additional 1,500 kilowatt-hours of electric power would also be required to compensate—also meagerly—for the electric power generated when bleeding the two 1,250-kilowatt turbine generators and if this supply was furnished by a straight condensing turbine taking 13.5 pounds of steam an hour, which would be about as economical operation as could be effected, it would cost $5.79 per hour. If the 1,500 additional kilowatt-hours of electric power needed were purchased at the very best attainable rate, 9 mills per kilowatt-hour, the hourly expense so incurred would be $13.50. In toto then, the cost of operating the second mill in the manner employed in driving the first mill would entail an expenditure of $12.08 or $19.79 per hour, depending upon whether the 1,500 kilowatt-hours of electric power were generated at the plant by means of a straight condensing turbine, the cheapest



Courtesy The Terry Steam Turbine Co.

STEAM TURBINE BELT DRIVE AT THE ST. REGIS PAPER CO., DEFERIET, N. Y.

way, or were purchased from without at the extremely low rate mentioned.

The present method of operating the second mill with the two 1,250-kilowatt extraction type turbine generators entails a total cost of $10.37 an hour, so a minimum saving of $12,804.48 over the cost of operating it in like manner to the first mill is realized, or a saving of $70,536.96 annually if the 1,500 kilowatt-hours of electric energy had to be purchased from without. The smaller saving represents a return of 45.8 per cent per annum on the investment of some $28,000 made in condensing turbine and generator; the larger, one of 252.3 per cent.

Economical Turbine-Generator Installations

In the first plant in the state of Oregon to convert fir slabs into Kraft pulp and paper, the extraction type of turbine-generator has been the selection of the St. Helena Pulp and Paper Company, Helena, Ore., for its main mill power unit. A 60-cycle turbine-generator, rated at 1,500 kilowatts at 80 per cent load factor, is the chief prime mover, operating on dry steam at 225 pound gage pressure and exhausting into 2-inch absolute back pressure. Steam extracted at 20 pounds gage pressure from one of the first turbine stages will serve to heat the plant and provides adequate steam for all process work.

Courtesy The Terry Steam Turbine Co.

ST. MAURICE PAPER CO., THREE RIVERS, QUE., UTILIZES AN EFFICIENT STEAM TURBINE MAIN BELT DRIVE.

Another interesting installation, both because it is one of the largest steam turbine installations in a paper mill in the United States and because condensing and non-condensing turbine units of large size operate in parallel is that of the Champion Coated Paper Company at Hamilton, Ohio. A 2,000-kilowatt, non-condensing unit is to carry sufficient load at all times to furnish the exact amount of process steam required by the plant and a 6,000-kilowatt, multi-stage, high economy condensing turbine is to care for the fluctuating load of the mill.

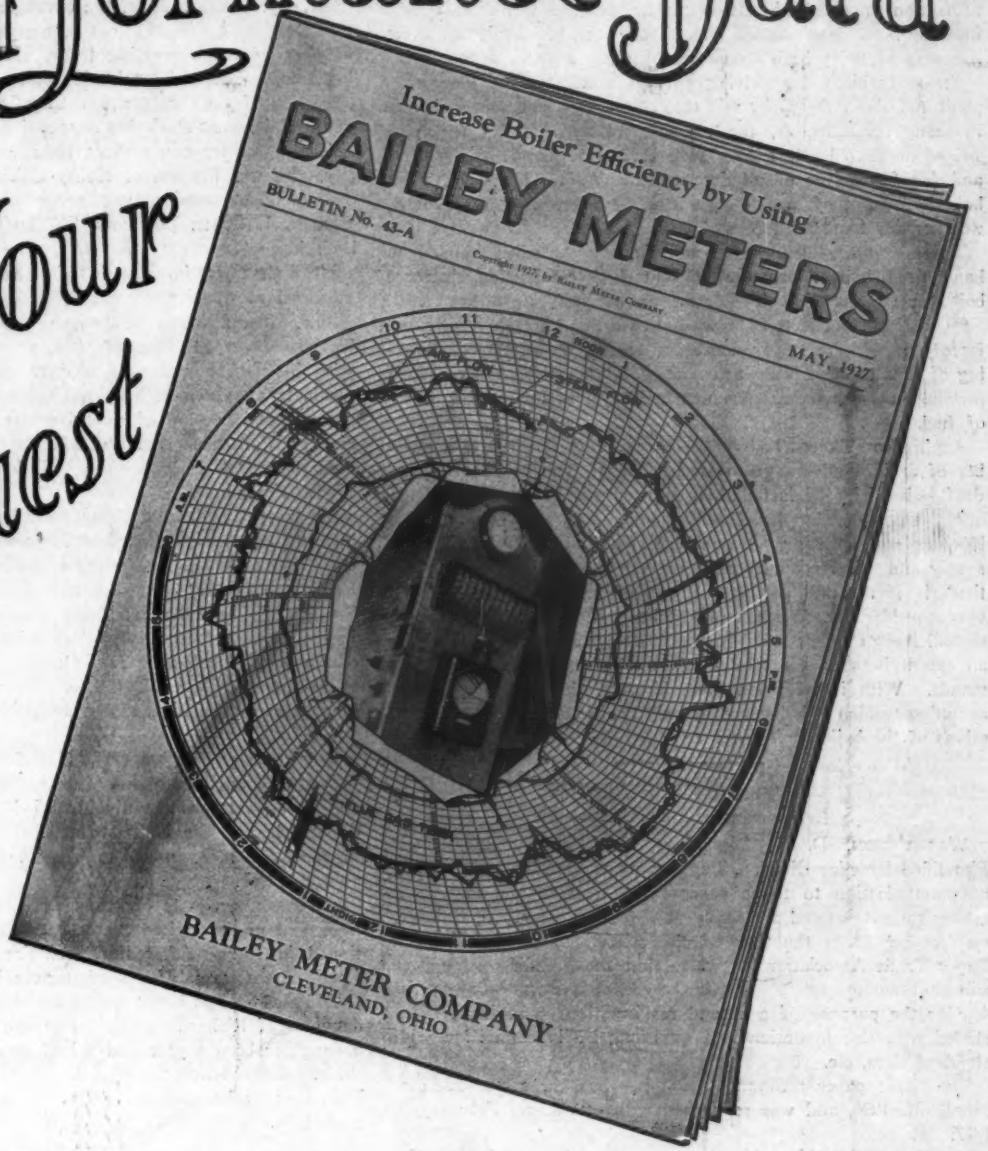
A bleeder turbine installation of note has recently been made in the plant of the E. Z. Opener Bag Company, Braithwaite, La. A similar unit was installed also by the Watab Paper Company, Sartell, Minn., a short time ago, showing that the extraction type of steam turbine units are rapidly gaining in popularity in paper mill service.

In the accompanying statistical table, pertinent operating economies, desirable savings and other economic data concerning further typical applications of steam turbines to the needs of the paper mill are listed. These records are in no way exceptional and very probably are duplicated or bettered by installations in many other paper mills. The great trouble in presenting such evidence of the wisdom displayed by progressive paper mills in employing these prime movers which have so generally demonstrated their high economic value in exacting conditions of service is that in many instances cost records have not been kept which are susceptible of analytical study for purposes of comparison.

An official of a prominent paper mill recently interrogated concerning the experience of his company with a modern type of steam engine drive, for illustration, had little difficulty in presenting quite an imposing portrayal of the improvements attrib-

Performance Data

at your request



This new bulletin gives performance data concerning the Bailey Boiler Meter which records Steam Flow, Air Flow and Flue Gas Temperature. It tells of numerous instances where large savings have been effected by the use of Boiler Meters in industrial plants as well as central stations.

The bulletin contains chart records which have been reproduced in color to show the kind of boiler operation obtained before and after the installation of the Steam Flow, Air Flow guide. This information, together with test data and cost figures showing the actual savings in fuel consumption, labor and additional boiler units will be of interest to you.

Write for Bulletin No. 43A.

Bailey Meter Company

2041 East 46th St. **Cleveland, Ohio**

Bailey Meter Company, Ltd., Montreal, Que.

utable to the turbine drive in question, but when it came to placing a figure on the value of the annual savings admittedly realized he was quite at a loss. Doubtless, very much the same lack of specific operating records pertains in many another establishment. Such condition is very unfortunate, for if such records were available, it is highly probable that considerably greater progress and standardization in paper mill steam turbine practice would have been made by now. No inconsiderable money loss, of benefit to no one, has very probably been contracted by many a paper mill.

Steam turbines for driving various auxiliaries in the power plant and about the paper mill also effect very substantial savings in many instances, as, for example, turbine blowers supplying forced draft to boiler grates, such devices as pump driving units and for fan drives of all descriptions. As turbine blowers for boiler draft, they are particularly desirable and economical, whether for hand fired or stoker fed boilers.

These comparatively small individual units when applied to hand fired boilers promote efficient fuel combustion, increase boiler output and make feasible the use of cheaper grades of coal. Fuel costing from $1 to $4 less a ton than that necessary for satisfactory natural draft operation can frequently be employed. Banking of fires to meet peak loads can be largely dispensed with, the turbine blower meeting such demands without appreciable waste of fuel.

Applied to stokered boilers, the turbine blower displays a number of decided advantages over the central fan system of forced draft—simplicity of installation, reduced cost, economy of operation, reliability and low upkeep expense. Also, with turbine blowers, each unit of a boiler bank has its individual forced draft supply and this frequently proves a very decided advantage, particularly if the mill power load and demand for process steam vary considerably. With a number of boiler units in operation, the efficiency of the central forced draft system will vary to quite an extent between the total minimum and maximum steam demands. With individual turbine blowers, the efficiency of the actuating turbine is influenced by only the relatively limited fluctuations of the boiler unit it serves.

For Tissue Simplification

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 28, 1927.—H. R. Colwell, Simplified Practice Division, Department of Commerce, is sending a communication to tissue paper manufacturers and merchants asking them to attend a meeting at the Congress Hotel, Chicago, on October 24 at the time of the convention of the National Paper Trade Association "at which time the Standing Committee will convene to consider Simplified Practice Recommendation No. 46, for the purpose of a second reaffirmation or revision." Included with this invitation is a questionnaire in connection with standard sizes, etc.

The tissue paper recommendation has been in operation since March 31, 1926, and was reaffirmed without change, February 3, 1927.

Mr. Colwell is asking that the answers to the questionnaire be here not later than October 12 so that they can be tabulated in time for the Chicago meeting.

To Work Out Paper Schedule

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 28, 1927.—The following subcommittee has been appointed by the Specifications Committee of the Joint Congressional Committee on Printing to work out the paper schedule for the Government Printing Office for the coming fiscal year: Ansel Wold, E. E. Emerson, E. O. Reed, and William Kerwin. This subcommittee is now working on the schedule and will make recommendations to the full specifications committee in time to have the schedule ready for the Joint Committee when it meets early in December.

Obituary

Charles J. Cohen

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 26, 1927.—With the passing of Charles J. Cohen head of the envelope firm bearing his name, the Quaker City suffers the loss of a noted civic leader and veteran member of the converting trade. His death came suddenly at his summer home in Atlantic City. Mr. Cohen was a former president of the Philadelphia Chamber of Commerce, president of the Fairmount Park Art Association, author and noted art connoisuer, and for many years linked with the public life of the city. He was the son of Henry Cohen, founder of the envelope manufacturing concern and paper business now known as the Charles J. Cohen Company, 500 Ludlow street, and established back in 1837.

Mr. Cohen was born in this city, September 21, 1847. He was educated at the famous old Dr. John W. Faires' Classical Institute, a noted private academy of the last century and at Carlton Terrace, Liverpool, England. At an early age he entered business with his father and was actively connected with it until his death, having been at his desk just a few days previously. Mr. Cohen was an author of several works of historical interest to the city of Philadelphia and on Hebrew literary subjects, among them being "A Hebrew Omar of the Year 1800" and "Ancient Jewish Ceremonial."

He was a member of many societies and organizations, among them the following:—Board of Directors, Philadelphia Chamber of Commerce; Board of Managers, Philadelphia Fountain Society; President Portugese Jewish Congregation Mikve Israel; Historical Society of Pennsylvania; Pennsylvania Museum and School of Industrial Art. In 1880 he married Miss Clotilda Florance, daughter of Jacob Florance, who survives him. Also surviving are his son, Albert M. Cohen, vice president of the envelope manufacturing business and a daughter, Miss Eleanore Cohen.

James Wendell Southard

James Wendell Southard, who died in Hirschwang, Austria on August 22, was prominently identified with the paper trade, both in Austria and the United States. Born in Morenci, Michigan, in 1895, he later moved to Toledo, Ohio, where he remained until the war.

He was a graduate of Kenyon College and later served as a lieutenant in the United States Naval Aviation Corps, being stationed in Italy. After the Armistice he joined the American Relief Association, with headquarters in Vienna.

While a resident in Vienna he married Miss Fay von Schoeller, daughter of Richard von Schoeller and leaves, beside the widow, a daughter born a year and a half ago.

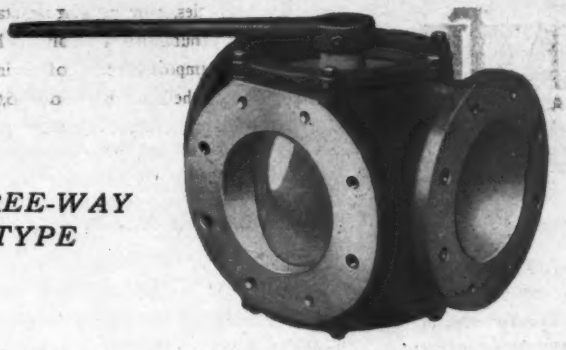
Mr. Southard was the president of the Old Masters Paper and Pulp Corporation and the Erie Steel Corporation, both of New York City.

Frank M. Forkner

INDIANAPOLIS, Ind., September 26, 1927.—Frank M. Forkner, 59 years old, treasurer of the Hartford City Paper Company of Hartford City, Ind., and one of the city's most prominent business men, died recently at his home following an extended illness of kidney trouble. He had been returned home from an Indianapolis hospital. He began life as a teacher in the rural schools near his home town and later entered business.

John H. Williams

ADAMS, Mass., September 27, 1927.—John H. Williams, aged 59, Overseer in the beater department of the Berkshire Hills Paper Company, was found dead in the beater room Wednesday of last week. Death was due to heart failure. He was born in Wales and has lived in Adams for the past 40 years.



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MAY INCREASE DUTY ON FRENCH PAPER

Large imports of paper from France to the United States may be subjected to increased duties, or even embargoed as a result of the differences between the United States and France over the newly announced French customs law.

The European office of the Import Committee of the American Paper Industry has cabled a report on the situation in France as it affects paper. This cablegram says it is impossible to foretell the result or effect of the controversy, as all depends on further concessions by France. If no concessions are made, German competition in France with American paper will be made easier, or an increased demand may increase French prices. This would mean a higher dutiable value on French paper shipped to the United States, the home market price being the basis upon which American duties are computed.

Under the American tariff laws, the President has the right to increase any existing duties 50 per cent, to increase the duties to a rate equivalent to that charged upon American goods, or to impose an embargo denying entry into the United States of any such goods.

Pending interchange with France, in an effort to secure the same treatment for American goods that is given German merchandise, no announcement has been made which, if any, of these courses will be followed.

France is asking reciprocal tariff agreements with the United States. The United States can not grant France lower duties on any commodity than are accorded to any nations enjoying favored nation treaties with this country.

American paper exports to France will be far less affected by the new French tariff than imports from France into this country.

France has in the first half of the current year shipped over $2,000,000 worth of cigarette paper to this country. Writing paper exports have also been heavy.

If France maintains its present position, it is fair to assume that the United States will not fail to take some definite protective action. Any of the possible steps outlined above would practically stop imports of paper of all kinds from France, as the existing United States tariff was intended merely to equalize the cost of production between America and foreign countries and to give the American mills an equal opportunity with foreigners in the domestic market. If because of French tariff increases, higher duties, countervailing or retaliating are imposed here, the French manufacturer probably will be unable to compete in our markets.

Imports of paper of all kinds from France to the United States reached a value of over $5,000,000 in 1925, and the volume was over $4,000,000 in 1926. Cigarette paper is a large proportion of these totals.

RED CROSS APPEAL TO PAPER MEN

The entire paper field in New York City will be intensively covered in the 1927 Red Cross Roll Call, according to the plan of representative leaders who, as volunteer chairmen of specially organized groups, are already formulating a comprehensive Roll Call program. Mr. Adam K. Luke, of West Virginia Pulp and Paper Company, heads as chairman the Paper Manufacturers and Dealers group, and Mr. Theodore E. Casselman, of T. E. E. Casselman, heads the Paper Boxes group.

These groups are among the earliest formed in accordance with the campaign plan of committee organization of the city and under the personal direction of the chairmen are already inaugurating a program of wide activity. Every phase of New York's industrial, mercantile, and professional life, will be represented this year in the Roll Call organization of the metropolis to secure the maximum public response to the annual membership effort and by the opening of the Roll Call on Armistice Day it is estimated that approximately 200 such group committees will be functioning, each under its individual chairman, representing a total of some 1,500 of the city's outstanding leaders serving in a volunteer organization.

The chairmen of the groups covering the paper field, in outlining their roll call work, anticipate even more generous support for the forthcoming appeal and aim at an unanimous enrollment of the personnel throughout their field.

Included in the outstanding metropolitan activities of the Red Cross, for whose adequate maintenance the annual membership invitation is extended to every resident of the city, are the disaster relief and the public health program under which thousands of surgical dressings are supplied each year to local hospitals and which also covers nursing service, first aid, and work in home hygiene and care of the sick. Disabled ex-service men and their dependents are also a large factor in the Red Cross program and activities on their behalf include legal assistance, money loans, and medical attention.

PULP AND PAPER STATISTICS

The American Paper and Pulp Association has of late been receiving from member mills an increasing number of inquiries for information regarding raw materials, paper stocks and business conditions. A review of the mills making such inquiries indicates that many of the larger mills with statistical and research departments at their command feel that the statistical work done by such departments may receive valuable supplemental information from the Association which either adds to or confirms the data already collected and compiled by them. This being true, it would then seem that there are perhaps many other member mills in many cases not so favorably situated to compile such data which might make use of statistical information concerning raw materials or business conditions which the Association collected.

Where member mills are members of affiliated associations they are urged to make use of their respective associations for statistical and other information.

The American Paper and Pulp Association receives reports and publications from its affiliated associations and many other associations and from other sources which are not usually available to individuals. Such reports often contain up-to-date statistical matters concerning certain raw materials or business conditions which bring to light a view of the subject somewhat different from that generally published in newspapers and other periodicals.

Since the American Paper and Pulp Association began its statistical service during the past year it has added largely to its sources of information as well as to its statistical records and as a result the Association is today better equipped than ever before to give or obtain information pertaining to many commodities, industries or divisions of the paper industry which might be helpful to member mills. Naturally, it is impossible for the Association to publish but a small part of the information which it has on hand. On the other hand, this information is available to member mills for use by the purchasing, production and other divisions providing they will indicate just what they desire in their direct request to the Association. It is believed that many mills could and would obtain more direct results from the Association by submitting individual requests for data or other information as outlined above and that to such mills there could be a saving of considerable time and expense in the collection and compilation of data which may already have been collected and compiled to a large extent by the statistical department of the Association. It is only by receiving such requests from the member mills that the Association may best render valuable services to its members and in this case where there is a probability of some direct results being obtained by the mills it is suggested that such use of this information be made more frequently by the members.

Favorable comments from a very large number of mills have been received concerning the usefulness of the *Association's Weekly Business Review* and this particular bulletin has well established itself with the industry.

It is hoped and requested that members of the American Paper and Pulp Association make more constant use of the vast store of information being collected by the Association and which is available to its membership.

New Taggart-Oswego Plant Nearly Ready

OSWEGO, N. Y., September 24, 1927.—Operations will begin in the new plant of the Taggart-Oswego Bag and Paper Company about January 1, according to officials of the company, the product to be cement bags. New machinery for the Oswego mill is expected to be shipped during October. The bag making unit will be put in operation as early as possible but schedules will be arranged so as not to interfere with the production of cement bags at the Watertown and Herring plants.

The company plans to take advantage of the usual winter slump in the manufacture of cement bags, due to a slowing up of construction work, to ship machines from the Watertown and Herring mills to the Oswego plant. Bag production will be in progress at the local plant before this class of bag production is discontinued at Watertown and Herring.

Until the new paper machine is installed kraft paper will be shipped to Oswego for manufacturing purposes. The new paper machine, now under construction, will not be completed for some time.

Canadian Paper Exports Increase

Canadian exports of pulp and paper in August were valued at $15,714,283, according to the report issued by the Canadian Pulp and Paper Association. This was an increase in value of $2,040,606 over the previous month's figures and of $1,763,462 over the total for August, 1926.

August exports of wood-pulp were valued at $4,469,897 and of paper at $11,244,386, as compared with $4,079,938, $9,593,739 respectively in July.

Details for the various grades of pulp and paper are as follows:

	August, 1927		August, 1926	
	Tons	$	Tons	$
PULP:				
Mechanical	30,414	1,002,863	21,303	599,334
Sulphite Bleached	20,346	1,576,627	17,432	1,300,016
Sulphite Unbleached	18,706	1,001,636	15,271	861,851
Sulphate	14,072	852,181	13,576	853,672
Screenings	2,030	36,590	.....	.....
	85,568	4,469,897	67,582	3,614,873
PAPER:				
News Print	163,115	10,675,536	149,935	9,865,830
Wrapping	1,128	129,623	1,006	115,913
Book (cwts.)	10,315	62,161	7,230	55,606
Writing (cwts.)	1,415	10,422	403	3,402
All Other	.....	366,644	.....	295,197
		11,244,386		10,335,948

For the first eight months of the year the total value of exports of pulp and paper amounted to $114,397,774, compared with $111,871,511 in the corresponding months of 1926, an increase for the current year of $2,526,263.

Of the total in this period exports of pulp accounted for $31,256,992 and paper for $83,140,782, the respective totals for the eight months 1926 being $33,238,061 and $78,633,450.

Figures for the various grades of pulp and paper in this period are as follows:

	8 months, 1927		8 months, 1926	
	Tons	$	Tons	$
PULP:				
Mechanical	165,002	5,016,290	217,141	6,433,083
Sulphite Bleached	159,825	12,449,148	133,620	10,396,803
Sulphite Unbleached	129,019	7,022,762	167,372	9,514,468
Sulphate	109,098	6,602,493	110,349	6,893,707
Screenings	8,736	156,299	.....	.....
	571,680	31,256,992	628,482	33,238,061
PAPER:				
News Print	1,204,557	78,855,987	1,118,816	73,731,642
Wrapping	10,012	1,134,749	12,657	1,575,305
Book (cwts.)	68,720	465,387	35,502	306,252
Writing (cwts.	10,085	81,425	13,341	99,542
All Other	.....	2,603,234	.....	2,920,709
		83,140,782		78,633,450

Pulpwood exports have been greater this year, the total exports for the first eight months being 1,219,404 cords, valued at $12,213,614 as compared with 976,345 cords valued at $9,644,474 exported in the corresponding months of 1926.

Long-Bell Reforestation Plan To Be Expanded

[FROM OUR REGULAR CORRESPONDENT]

PORTLAND, Ore., September 24, 1927.—The reforestation program being conducted by the Long-Bell Lumber Company at Ryderwood, Washington, will be extended this coming winter, according to John B. Woods, forester of the company. Between 1,000 and 1,500 acres of cutover land will be reforested, and the plan eventually is to have the reforestation keep pace with the logging.

This company started a nursery at Ryderwood two years ago and this has flourished successfully, with a half million plants in a healthy condition reaching their two year stage next spring, another half million being a year old at present, and a million a year old in the spring. California redwoods, Port Orford cedars and Sitka spruce are included in the experiments, and seeds will be taken from Douglas fir cones now being gathered for the purpose.

Paper Index Number

WASHINGTON, D. C., September 21, 1927.—The August wholesale price index number for paper and pulp was 152.2, compared with the same figure for July and 171.8 for August of last year, taking 1913 at 100 per cent, according to the Bureau of Labor Statistics, Department of Labor.

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Conducted by W.G. MacNAUGHTON, Secretary

Paper Qualities

By Dr. Jessie E. Minor [1]

It has been said that the civilization of a nation may be judged by the amount of paper that is used and it might well be added that the permanence of that civilization is directly related to the permanence quality of the paper that is used. Today history is not written on pyramids of stone but is largely entrusted to printed pages. Therefore, the subject of the quality of paper and its ability to maintain that quality for any length of time is of sufficient importance to warrant and invite fair minded discussion from every possible angle until every discoverable fact in the matter has been made clear in the minds of manufacturers and buyers of paper.

The article on the subject Purity Factors in Chemical Wood Pulp and Their Relation to Paper, by N. L. Nourse of the Brown Company, published in PAPER TRADE JOURNAL, July 21, 1927, is one which sums up in an admirably concise manner the trend of thought which is leading woodpulp technologists towards the production of a paper of ever increasing purity and quality and of increasing permanence. But there are other phases of the subject of paper quality which might profitably be discussed and it is hoped that the discussion begun in this article may be continued until every phase of the subject has been exhaustively studied.

Mr. Nourse rightly mentions the fact that the artist papermakers of the past have turned their attention to the development of the physical qualities of paper while the technologists of today are developing the chemical properties of the cellulose. To this might be added the work of the physical-chemists who by extensive research are developing our knowledge of the structure of the molecule of cellulose, the nature of the bonds which hold the molecules together to form the fiber and the factors which affect these bonds from both chemical impurities and mechanical treatment.

Conditions to Be Analyzed

When we say that the quality of a paper may be entirely judged by the alpha cellulose content of the pulp or stock from which it is made, we assume three conditions which should be analyzed:

(1) That all papermaking fibers are identical in chemical nature.

(2) That all papermaking fibers, when pure, respond in an identical manner to mechanical treatment.

(3) That commercial papers made from different kinds of fibers are subjected in the process of manufacture to at least equivalent chemical impurities, such as size, filler, acidity, etc.

Discussion of (1): As a result of physical-chemical study, and especially the use of the X-ray for determining the molecular structure and the forces which produce the regularity of structure and the strength of the fibers, it is now accepted that the cellulose molecule, from whatever source, always contains the same number of atoms arranged in the same crystal structure. And further it is accepted that the unit cell of the fiber, from whatever source, consists of four such molecules bound together in a definite manner. The cotton fiber is formed in nature of relatively pure cellulose unit cells while linen and hemp may be separated from the outer bark by the mechancal process of retting. The cellulose cell units of the wood fibers, on the other hand, during growth are thickened by the absorption from the sap of a group of substances usually classed together as lignin. The intensity of the force with which these impurities are held by the cellulose is evidenced by the drastic chemical and mechanical treatment required to separate the cellulose from the lignin. Since all chemical energy comes from within the molecule it is apparent that in order for a pure wood fiber to equal in strength a pure cotton fiber, the wood fiber must be able, after the drastic cook, blow-off and bleach, to readjust all that released energy to the perfect neutralization and balance formed in the cotton fiber in the slow process of growth. At present there is no indication of this attainment as even a remote possibility. This difference in the distribution of the forces holding together the unit cells which make up the fibers of wood and cotton is well evidenced in the way in which these fibers respond to the beating process. While rag fibers split lengthwise into innumerable fibrillae, of considerable strength, even the pure Alpha pulp fibers, after long beating, break into a shapeless mass with low cohesive force and fair susceptibility of reaction with impurities.

The pure cotton fiber, however, possesses one quality which indicates that, although superior to wood pulp, it is inferior to linen or hemp fibers in the matter of the complete neutralization of all its cohesive forces in binding together the cell units to form a strong fiber. This property is the manner in which cotton swells when immersed in water. At definite positions in the structure of the cotton fiber, free affinities attract and bind water molecules so closely and in such abundance that the unit cells of the fiber are pushed apart and the fibers swell, thus becoming more susceptible to mechanical abrasion and separation into fibrillae. Linen fibers which do not so swell require much more power in the beater to bring about fibrillation than do cotton fibers. And in spite of the more drastic treatment required to separate raw linen fibers from the adhering natural impurities and prepare them for

[1] Member TAPPI; Chief Chemist, Collins Manufacturing Co., North Wilbraham, Mass.

papermaking than in the case of cotton, the paper made from linen is stronger than that made from cotton.

Paper made from worn rag fibers may not be much different in strength from paper made from wood pulp since the long continued wear on the cotton fibers has very materially worn away the outer layer of the fibers and so weakened the cohesion of the fibrillae as to make it respond readily to mechanical friction. But these fibers still maintain their power to form fibrillae which have very desirable felting properties on the machine, considerable strength and considerable resistance to deterioration.

Reaction to Mechanical Treatment

Discussion of (2): Woodpulp manufacturers have been justly proud of their success in improving the resistance of wood pulp to beating and improving its felting qualities by decreasing the amount of lignin residue left in the pulp. The adhesive affinity of this substance for wood pulp is so strong that a very little of it can work very effectively to aid the beater in the disintegration of fiber structure. But, from arguments given above, it seems improbable that wood pulp of even 100 per cent purity can equal in original strength or in resistance to deterioration, the paper from new cotton rag of equal purity.

Discussion of (3): The third objection to grading paper made from different kinds of fibers entirely on their content of alpha cellulose lies in the difference in the way in which these papers are usually made and the differenc in the kind of contaminating impurities found in the finished papers. This fact was very nicely developed by Gosta Hall, now of the Albemarle Paper Company, in his report given before the Technical Association and printed in Technical Association Papers Series 9, 1926. In this report of work done in the Government Laboratory in Sweden he states that commercial papers purchased by the Government, when tested for permanence, showed for all rag papers an even greater percentage decrease in strength than for all wood papers. But when the situation had been thoroughly analyzed by making hand sheets under varying conditions and testing them for resistance to folding, both before and after exposing them to heat and to sunlight, such results were obtained as:

FOLDING TEST RESULTS

	All-Rag Paper			All-Sulphite Paper		
	Before Exposure	After Exposure	Per cent Retained	Before Exposure	After Exposure	Per cent Retained
Waterleaf	210	163	77	957	152	16
Rosin sized	170	155	91	264	73	28
Tub sized	1430	480	34	576	71	12
Rosin and Tub sized	1490	460	31	190	26	14

From such results Mr. Hall was led to state that, "The deterioration of a sulphite paper is due to the comparatively small resistance of the fibers, while the deterioration of the rag papers is due mainly to the poor permanence of the tub sizing."

While animal sizing is used more extensively in rag papers than in wood pulp papers, clay fillers, which weaken the paper when made but protect it against ageing, is used more commonly in wood papers than in rag papers. Also, the amounts of rosin size used and the acidities attained are apt to be greater in rag papers than in wood papers.

These are only a few of the arguments which could be cited to show that it is not possible to compare the qualities and permanence of two papers on the alpha cellulose content of the raw materials unless it has been first ascertained that the fibers are of the same kind, that the mechanical treatment has been equally drastic, and that the chemicals added during the process of making the paper are identical and have had equal opportunity to attack the fibers.

Timber Growing and Logging Practice

The United States Department of Agriculture has recently issued Department Bulletins Nos. 1491 and 1493, discussing the measures necessary to keep forest lands productive in the Douglas Fir Region of the Pacific Coast and in the Central Hardwood Region in the Mississippi-Ohio Valley. These bulletins belong to the Timber Growing and Logging Practice series which the United States Forest Service is issuing, covering all the major timber regions of the United States, and like those previously published, are of decided value.

They are written for the layman and present the important features of the two regions in non-technical terms together with the best information available as to the possible returns from the practice of forestry in the various forest types considered.

The Douglas Fir Region

This Bulletin, No. 1493, is of particular interest to the pulp and paper industry in view of the future possibilities of the West Coast as a producer of pulp and paper. Since the forests in this region are the last great reservoir of large softwood timber in the United States and promise to be the best hope of producing second crops of high-grade lumber, the bulletin naturally deals particularly with the applications of forestry to the lumber industry. The possibilities of the production of pulpwood are discussed, however, and the principles of timber production are the same regardless of the way in which the crop is to be utilized.

The outstanding fact which is brought out by this bulletin is that the Douglas Fir Region can, in most cases, be expected to establish second crops promptly and effectively if adequate fire protection is given to cut over lands. The fire prevention work on the Pacific Coast has been remarkably well organized for the uncut areas but there is still a lack of proper appreciation and protection of the cut over areas which has made many acres unproductive.

Central Hardwood Region

The Central Hardwood Region is of less interest to the pulp and paper industry but the cotton wood of the river bottoms and the tulip poplar of the better upland soils are valuable for soda pulp and of importance to the mills located in that region.

As on the Pacific Coast the most important problem is that of preventing forest fires and much less progress has been made in the Central Hardwood Region. Since a very large percentage of the land in this region is subject to grazing, much space is devoted to this topic and specific recommendations are made for the proper combination of timber growing and grazing.

Necessity for Further Research

These bulletins bring out the necessity for more extensive research before all the problems of timber production can be solved. A comparative reading of the two shows clearly the importance of the work which is being done by the United States Forest Experiment Stations. The Douglas Fir Region has been fortunate in having an experiment station established in it for several years while that for the Central Hardwood Region was only started this year. Recommendations for the latter region are less specific in many instances and while various federal and state agencies have accomplished considerable results there is no doubt that the establishment of the Mississippi-Ohio Valley Forest Experiment Station will be of great benefit to the forest owners in this region.

Heavy Chemicals Used in the Paper Industry

According to the estimate made by Chemical and Metallurgical Engineering in its Chemical Exposition Number, September, 1927, the yearly consumption of heavy chemicals by the paper industry is as follows:

Sulphuric acid	500 short tons
Salt (NaCl)	260,000
Alum ($Al_2(SO_4)_3$)	100,000
Liquid chlorine	32,500
Soda ash	75,000
Caustic soda	9,000
Silicate of Soda, 40 degrees Be.	10,000
Salt cake	103,000
Lime	330,000

Binders Board Makers to Meet

The Binders Board Manufacturers Association, which is doing some very interesting work along cost and simplification lines, will hold a regular meeting at Westport, Conn., on September 30.

Sulphite Pulp from Spruce[1]

By Dr. Donald E. Cable[2]

PREFACE

The purpose of this thesis is to adequately describe certain tools of research which have been found very satisfactory in making a systematic study of many of the factors entering into the manufacture of that product which we call "Sulphite Pulp."

By tools of research is meant—apparatus, equipment, methods of operation and methods of testing, physically or chemically. It is felt that in this thesis is described a set of research tools which can be used in studying a vast number of problems, variables or factors entering into the manufacture of sulphite pulp. By way of example a few such problems which have been investigated with these tools are discussed in detail.

The author is indebted to Mr. G. F. Whiting for having made or assisted in making some of the sulphite cooks and all determinations of bleach consumption and loss of weight of pulp on bleaching. Dr. D. L. Sherk and Mr. H. V. Hansen deserve all credit for the determinations of "Total Solid Content of the Waste Liquors," and of the "Reducing Material in the Waste Liquors" (see Chapter II).

The writer is also indebted to Prof. Ralph H. McKee, director of the Oxford Research Department, the late Mr. Louis S. Middlebrook, assistant to the president, and Mr. Hugh J. Chisholm, president of the Oxford Paper Company, for permission to present all the data and information contained in this thesis to the President and Faculty of Armour Institute of Technology.

DONALD E. CABLE.

CHAPTER I

Introduction

A great deal might be written on the history of paper making. Prior to the middle of the last century, the most important raw material for the manufacture of paper was rags. It is said that the Chinese were the first real pulp and paper makers and that they obtained their fibers by pounding pieces of bamboo that had been soaked in pits of lime water.

We also know that the Egyptians made *papyrus* (from whence our word *paper* is obtained) from a tall reed growing in the Nile. The first effort to make paper pulp from wood as the raw material seems to date back to 1853 in England when Watt and Burgess were granted a patent on cooking wood by the chemical process now called the soda process. This is an alkaline process which has been modified in certain ways during the following years for economical and other reasons. The most important modification from the standpoint of tonnage is known as the sulphate process which was invented by C. F. Dahl about 1884.

A second and very important chemical process for making pulp from wood was invented in 1866 by a Philadelphian, B. C. Tilghman. This process differs from the first process or its subsequent modifications in that Tilghman cooked the wood with a weakly acid solution, consisting essentially of dilute sulphurous acid, containing a limited amount of a bisulphite such as calcium bisulphite. This process is known far and wide as the sulphite process.

Although Tilghman is credited with the discovery of this process he encountered chemical and engineering difficulties in trying to commercialize the process. These difficulties were baffling and discouraging to say the least. The engineering difficulties were later solved by C. D. Ekman, a Swedish chemist, by A. Mitscherlich, a German chemist and by E. Ritter and C. Kellner, Austrian chemists.

Another wood pulping process of major importance is purely mechanical in its nature and was first carried out in Central Europe during the middle of the 19th Century. This process depends on the disintegration of wood into a fibrous or pulpy form by grinding the wood on a revolving stone.

Importance of the Sulphite Process

To gain a fair and well balanced understanding of the economic importance of the sulphite pulping process as compared with the others in United States at the present time Table 1 prepared from Government sources is given.

TABLE 1
PULP MILL PRODUCTS (UNITED STATES)[3]

	1925	1923
Wood pulp, total production, tons (a)	3,953,381	3,789,172
For sale (b)—		
Tons	912,687	1,063,398
Value	$55,200,140	$65,497,098
Class		
Ground, steamed, total production, tons (a)	69,174	103,713
For sale (b)—		
Tons	6,789	7,301
Value	$ 269,828	$ 235,050
Ground, not steamed, total production, tons (a)	1,534,088	1,464,081
For sale (b)—		
Tons	244,468	311,176
Value	$ 9,037,010	$11,167,012
Soda fiber, total production, tons (a)	484,546	445,162
For sale (b)—		
Tons	171,694	178,160
Value	$12,416,462	$14,098,270
Sulphite fiber, bleached, total production, tons (a)	610,556	557,846
For sale (b)—		
Tons	255,351	215,819
Value	$21,094,291	$19,283,046
Sulphite fiber, unbleached, total prod., tons (a)	780,651	853,381
For sale (b)—		
Tons	124,376	187,245
Value	$ 6,923,778	$11,601,969
Sulphate fiber, total production, tons (a)	409,668	312,483
For sale (b)—		
Tons	84,659	145,051
Value	$ 5,076,611	$ 8,732,030
Screenings, mechanical, total production, tons (a)	17,671	12,759
For sale (b)—		
Tons	2,105	1,746
Value	$ 21,050	$ 28,309
Screenings, chemical, total production, tons (a)	47,027	39,747
For sale(b)—		
Tons	23,245	16,900
Value	$ 361,110	$ 351,412

This table (Table 1) shows that of the total value of all kinds of pulp produced and sold in this country during the year, 1925, slightly more than half is represented by the bleached and unbleached sulphite pulp. Assuming that the sulphite pulp which was converted into paper directly is worth the same as that which was reported as sold, it will be seen by calculation that the total value of bleached and unbleached sulphite produced in the United States during 1925 is approximately $94,000,000.

The most widely used wood for making sulphite pulp is spruce, chiefly white spruce. This wood is probably superior to almost any other pulp wood of commercial importance for the making of sulphite pulp, all things considered.

It is obvious, therefore, that any experimental or research work done on the sulphite pulping of spruce which would lead to increased yields or improved quality of pulp would be of far reaching interest to the pulp and paper industry throughout the world, because the manufacture of sulphite pulp is not only of major importance in United States, but also in nearly every other

Dedicated to the memory of Mr. Louis Shelton Middlebrook, late assistant to the President of the Oxford Paper Company, at whose request this work was initiated and with whose permission, granted two days before his untimely death, this thesis is being presented to the President and Faculty of Armour Institute of Technology. Mr. Middlebrook, though a non-technical executive, showed during the three years he served as guardian of the newly established Research Department, that he believed wholeheartedly in the ability of sound scientific research to benefit industry. His unwavering encouragement and inspiring leadership in helping to build up this new research unit has commanded the undying respect and esteem of his subordinates.

[1] Contribution No. 7 from the Research Department, Oxford Paper Company, 87 35th street, Brooklyn, N. Y. (A Thesis presented by the writer to the President and Faculty of Armour Institute of Technology for the degree of Chemical Engineer—April 15, 1927.) The summary of this thesis is to be read at the fall meeting of the Technical Association of the Pulp and Paper Industry in Middletown, Ohio, October 5, 6 and 7.

[2] Assistant Director, Oxford Paper Company Research Department.

[3] Paper Trade Journal 84, No. 8, p. 89 (Feb. 24, 1927).
(a) Includes wood pulp consumed in mills in which manufactured.
(b) Includes wood pulp transferred to other plants operated by same companies.

pulp producing country such as Canada, Finland, Germany, Norway and Sweden.

The contents of this thesis will be limited to an exposition of the experimental methods and observations relating to an investigation of three important phases of the sulphite cooking of white spruce. It is hoped that this work will be extended in the future to an intensive study of many other phases of the sulphite cooking process. The experimental equipment used and methods of operation are excellently suited for studying nearly all possible steps and modifications of the sulphite process of cooking, and for determining the sulphite pulping characteristics of any kind of wood.

Miller and Swanson's Studies

Undoubtedly the world's greatest contribution to a more accurate and comprehensive knowledge of the technology of the sulphite pulping process, during the past five years, should be credited to the published results of Miller and Swanson.[4-14] It may safely be stated that these investigations have paved the way which has or will increase the yields of pulp in most of the American and Canadian Mills by 5 to 10 per cent over their production efficiencies prior to 1921.

Articles on the chemistry or engineering bearing on the manufacture of sulphite pulp have been pouring into the field of technical literature in ever increasing volume until it would now be a Herculean task even to write a historical review and prepare a complete bibliography on all that has been done and written about the sulphite process.

Many writers rush into print on frequent occasions without presenting much in the way of original work or ideas. Few there are who have delved very deeply into the mysteries of sulphite cooking and who have revealed a greater wealth of ideas from their findings than have R. N. Miller and W. H. Swanson during the years they were at the U. S. Forest Products Laboratory.

Much Unexplored Ground Remains

One might be led to believe that with the present profusion of published material on the sulphite process there are but few new

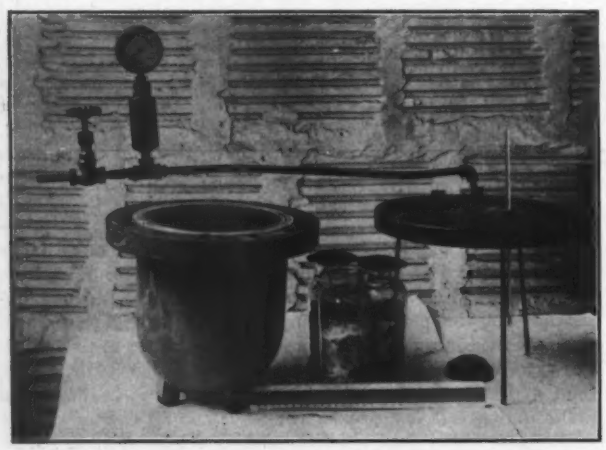

FIG. 1A

Sulphite digester (unassembled) and three glass bottles, containing wood chips, which are placed in it to be cooked by the sulphite process.

and important facts left in the realm of the unknown. To one, however, who has made an intensive study of this important field of pulp manufacture it becomes increasingly apparent that our present day horizon to the science of sulphite pulp manufacture is astoundingly narrow in comparison with the broad expanse which has not been reached by any scientific explorer.

Each new path we find branches off into several others and few of these overlap other trails or roads over which any human being has formerly trod. With scores of investigators, possessing the ability and facilities which Miller and Swanson had at their command, and working over a period of a hundred years it is doubtful whether they would have exhausted all the scientifically possible combinations of the numerous variables entering into the manufacture of sulphite pulp.

FIG. 1B

Sulphite digester as it appears when fully assembled and placed in Freas electric oven.

The more progressive pulp manufacturing companies in United States, such as Brown Company, Champion Coated Paper Company, Champion Fibre Company, Hammermill Paper Company, Kimberly-Clark Company, Mead Pulp and Paper Company, Oxford Paper Company, West Virginia Pulp & Paper Company and others with which the writer is less familiar are beginning to recognize the verity of this statement. They are financing and organizing their own exploring parties. Pulp manufacturing companies and groups in other countries are equally active in exploring the vast realm of the scientific unknown.

There are unquestionably many mines of great value resting untouched and unknown. The scramble is on to find these mines, figuratively speaking. The company whose research workers get there and stake their claims first will benefit tremendously over

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[4] Miller, R. N., and W. H. Swanson. Chemistry of the sulphite process. Paper Trade Jour. 74, No. 15, pp. 295, 297, 299, 301, 305 (April 13, 1922); Paper 30, No. 7, 96-98, 100, 102, 104 (April 19, 1922); Paper Industry 4, No. 2, 257-261 (May, 1922); C. A. 16, 3387.

[5] Miller and Swanson. Chemistry of the sulphite process. III.[13] Reactions of the calcium base. Paper Trade Jour. 76, No. 9, 49-51 (March 1, 1923); Tech. Assoc. Papers 6, 73-76 (1923); C. A. 17, 1328.

[6] Miller and Swanson. Chemistry of the sulphite process. IV. Distribution of sulphur during the cook. Paper Trade Jour. 76, No. 10, 51-54 (Mar. 8, 1923).

[7] Miller and Swanson. Chemistry of the sulphite process. V. Effect of various compositions of acid upon the yield and quality of the pulp. Paper Trade Jour. 77, No. 15, 51-52 (Oct. 11, 1923).

[8] Miller and Swanson. Chemistry of the sulphite process. VI. Relative effects of temperature and of acid concentration during the cooking. Paper Trade Jour. 78, No. 15, 178-181 (April 10, 1924); Tech. Assoc. Papers 7, 32-35 (1924); Wochenbl. Papierfabr. 55, 1341-1342 (May 31, 1924); C. A. 18, 1904.

[9] Miller and Swanson. Chemistry of the sulphite process. VII. Effects producable by variations in pressure. Paper Trade Jour. 79, No. 16, 49 (Oct. 16, 1924); Paper 34, No. 26, 1194 (Oct. 16, 1924); Paper Mill 48, No. 43, 28 (Oct. 25, 1924); Paper Ind. 6, No. 8, 1391-1392 (Nov., 1924).

[10] Miller and Swanson. Chemistry of the sulphite process. VIII. Studies of the acid hydrolysis of wood. Ind. Eng. Chem. 17, 843-847 (Aug., 1925); Paper Trade Jour. 81, No. 11, 53-57 (Sept. 10, 1925); Tech. Assoc. Papers 9, 118-122 (1926); C. A. 19, 2743.

[11] Miller, R. N. Relation between cooking conditions and yield and quality of sulphite wood pulp. Paper Mill 49, No. 41, 22, 24, 26, 30 (Oct. 10, 1925); Paper Trade Jour. 81, No. 23, 55-59 (Dec. 3, 1925); C. A. 20, 285.

[12] Miller, Swanson and R. Soderquist. Chemistry of the sulphite process. IX. Influence of hydrogen ion concentration. Paper Trade Jour. 82, No. 8, pp. 58-61 (Mar. 4, 1926); Tech. Assoc. Papers 9, 123-126 (1926); C. A. 20, 1516.

[13] Swanson, W. H., and W. H. Monsson. Chemistry of the sulphite process. X. Easy bleaching pulp. Paper Trade Jour. 82, No. 8, 62-64 (Mar. 4, 1926); Tech. Assoc. Papers 9, 127-129 (1926); C. A. 20, 1517.

[14] Swanson, W. H. Temperature schedule in sulphite pulping. Paper Mill 49, No. 46, 6 & 8 (Nov. 13, 1926); Paper Trade Jour. 83, No. 22, 40-42 (Nov. 25, 1926).

[15] Part II of the above series of articles on "Chemistry of the Sulphite Process" takes up the subject, "Chemical Properties of Pulp Prepared by Indirect Cooking," and was written by M. W. Bray and T. M. Andrews. It will be found in Paper Trade Jour. 76, No. 3, pp. 49-52 (Jan. 18, 1923).

their competitors on account of their strategic and commanding positions and material resources protected by patents.

These companies are not waiting for a few government employees in the Geological Survey to go out in the wilds for the purpose of finding, mapping and reporting on the new ore deposits which they have discovered. They are, instead, making the cleverest plans possible for having their own men discover and lay claims to the best mines.

CHAPTER II

Apparatus and Methods Used in Sulphite Pulping Investigations

The sulphite digester and other apparatus used by Miller and Swanson have been thoroughly described by Kress, Wells and Edwardes in their article, "The Equipment and Operation of an Experimental Pulp and Paper Laboratory"[16]). This apparatus reproduces on a small scale the general arrangement and sequence of operations encountered in an American sulphite mill of commercial size.

In the work being done in our research department we have devised a scheme for making sulphite pulp from wood chips of commercial size, on a scale which is sufficiently small to permit one man to do all the processing and testing of the pulp unassisted and yet the quantity of pulp obtained from each cook is sufficiently large to permit of obtaining very accurate figures of bleach consumption, loss of weight on bleaching and data on the sulphite waste liquor.

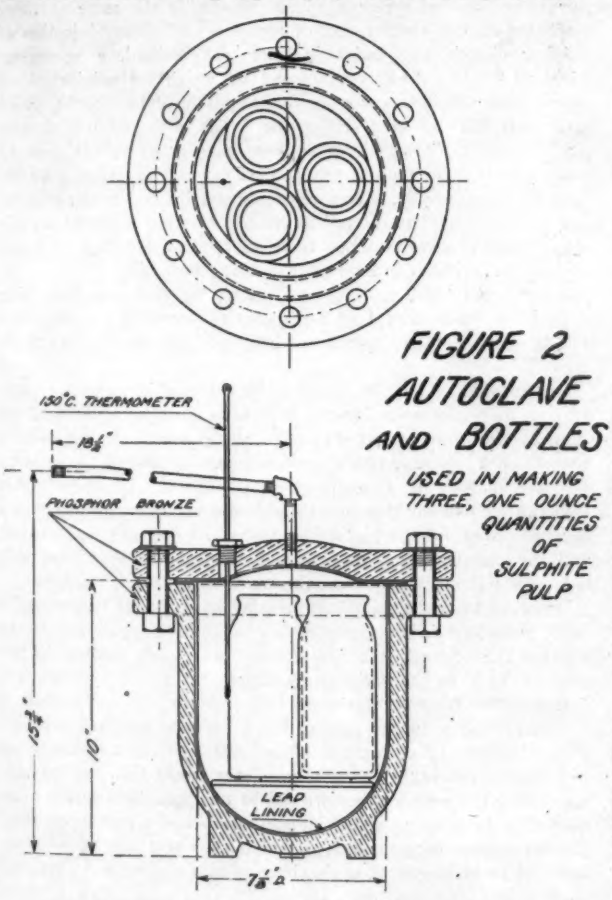

FIGURE 2
AUTOCLAVE AND BOTTLES
USED IN MAKING THREE, ONE OUNCE QUANTITIES OF SULPHITE PULP

FIG. 2

With our apparatus it is possible to run three cooks simultaneously, under a given set of temperature, pressure and time conditions or to cook just one lot of pulp on a much larger scale.

Method of Cooking Used[17]

Figure 2 shows a sketch of the lead lined bronze autoclave in which all our sulphite cooks were made. As shown by Figure 3, the digester while in use is inside a large Freas electrically heated drying oven. A copper outlet pipe leads from the top of the digester to the outside of the oven. The brass tee with oil seal, pressure gage and needle valve is attached to the end of the outlet pipe. The oil seal, shown in plates 1 and 2 (Fig. 1), but not in Figure 3, is used to protect the gauge from the corrosive sulphur dioxide vapors. This arrangement of apparatus obviates the necessity of opening the oven doors or of removing the digester from the oven during the cooking operation.

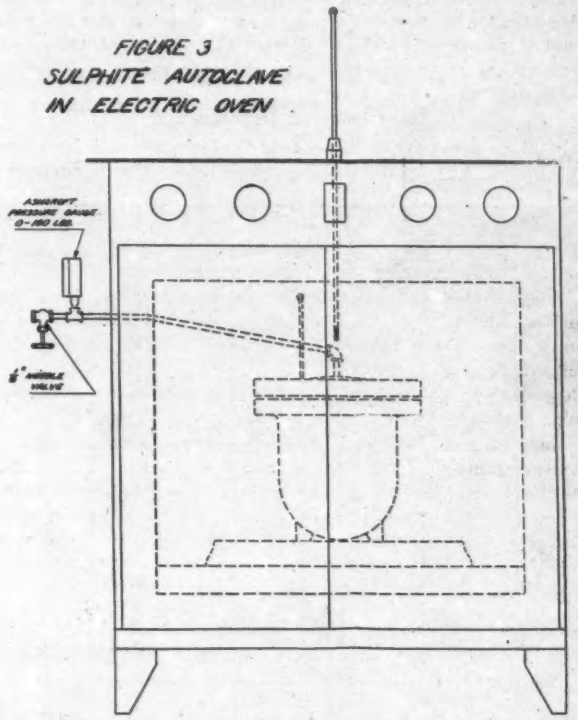

FIGURE 3
SULPHITE AUTOCLAVE IN ELECTRIC OVEN

FIG. 3

In using this autoclave for sulphite cooks 65 grams of wood chips, were placed in each of three 12-ounce wide mouth glass bottles. The chips were covered with a thin pad of cheese cloth on which were placed cut pieces (about an inch in length) of glass rod to prevent any floating of the chips after adding the measured quantity of sulphite acid. These three bottles were then placed in the autoclave and rested on a porcelain desiccator disk.

Plate 1 shows a photographic view of the wood chips in bottles, covered with cheese cloth and glass rods, lead caps for tops of the bottles, the digester body, cover, thermometer, relief pipe, gage and needle valve.

A 6 percent sulphur dioxide in water solution was poured into the autoclave and around the three bottles but only up to the base of the bottle necks. Two gaskets of soda pulp were then put in place and the top of the autoclave bolted firmly into position, taking care to place the inserted thermometer between bottles and wall

[16] Kress, Wells and Edwardes. The equipment and operation of an experimental pulp and paper laboratory. Paper 26, No. 13, 11-14, 28; No. 14, 24-27; No. 15, 19-23; No. 16, 23-25; 32 (June 2-23, 1920); Pulp and Paper Mag. of Canada 18, No. 23, 558-561; No. 24, 619-622; No. 25, 647-649; No. 26, 671-672; No. 27, 699-701 (June 3-24, July 1, 1920).

[17] This method of cooking has been previously described by McKee and Cable in Paper Trade Jour. 80, No. 17, pp. 41-46 (April 23, 1925).

of vessel. Plate 2 shows the assembled digester as it stands while being heated in the oven.

While making a cook, readings of time, oven temperature, digester temperature and pressure were made. As shown in Figure 3, the oven temperature is read by looking at the upper and outside portion of the oven thermometer. The top of the mercury column of the digester thermometer can be seen by looking through one of the upper windows of the electric oven after the temperature has risen to such a point as to bring the top of the mercury column above the top of the autoclave. With our apparatus that point was reached at approximately 90 degrees C. The temperature and pressure curves for the cooks described are shown in Figures 4 to 12, inclusive.

Importance of Impregnation

In all the cooks efforts were made to obtain thorough impregnation of the chips by the cooking liquor before the digester tem-

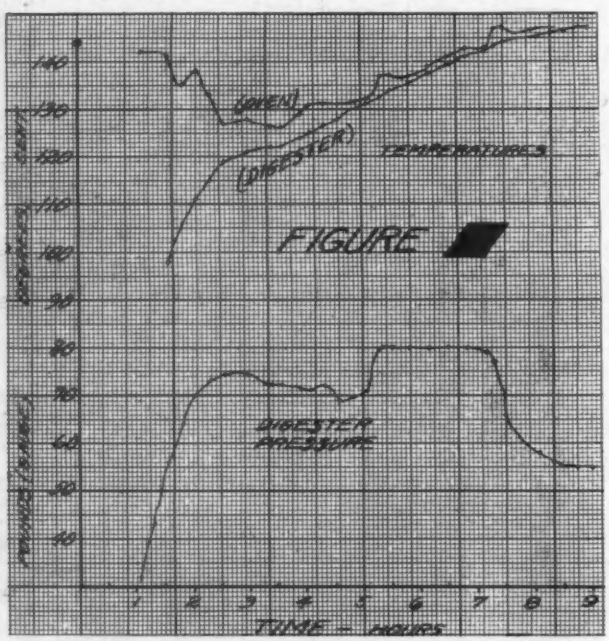

FIG. 4

Sulphite Cook using ¾ inch Spruce (S2) Chips, Cook Base in Acid No. 61 Calcium, No. 62 Magnesium, No. 65 Ca-Mag. Date of Cooks 7/13/25.

perature had reached 110 degrees C. Miller[21] has recently pointed out the great importance of having the chips thoroughly penetrated by the bisulphite part of the cooking liquor before the liquor temperature has reached or gone above 110 degrees C. At the Forest Products Laboratory it has been found that at temperatures above 110 degrees C. sulphurous acid alone will alter the lignin so that it will not dissolve. Above this temperature the wood turns brown and will not cook.

It has been found that the acid part of the cooking liquor penetrates the wood faster than the bisulphite part and "by reaching 110 degrees C. before the bisulphite caught up it has spoiled the center of the chip so that it will not cook." Miller states that a "punched" or "bored" cook is "nothing but one that is steamed too fast and which gets above 110 degrees before the chips are all penetrated by the bisulphite."

In order to favor the penetration of chips as much as possible in most of the cooks listed in this thesis, the writer resorted to the use of surplus gas pressure from a tank of liquid sulphur dioxide. During the first hour of these cooks, therefore, the tank of sulphur dioxide was connected by piping and reducers to the open end of the needle valve shown in Figure 3.

[21] loc. cit.

Two or three times during the first hour of a cook the gas tank valve would be opened until the pressure within the digester had risen to the pressure developed by the sulphur dioxide tank. The valves would then be closed and, due to the rather rapid solution of the sulphur dioxide gas (in the top of the autoclave) going into the solutions within the autoclave, there would be a fall in the gas pressure until the rising temperature of the autoclave solutions had caused a shift from an unsaturated condition to an over saturated condition.

At that point the liquid sulphur dioxide tank was disconnected from the outlet pipe of the autoclave and the pressure within the digester was allowed to climb until a maximum of 75 pounds was reached.

As soon as the sulphur dioxide tank was detached, and every half hour thereafter the oven and its contents were given a gentle rocking motion to cause a slight movement of the cooking liquor in contact with the digester chips which absence of direct steam heating failed to supply.

Miller's Statement Confirmed

In experiments which we have conducted it has been found that for spruce cooked under condition identically the same as those described in this chapter, except that the preliminary injection of sulphur dioxide gas under pressure was omitted, a screenings yield of 0.4 to 1.2 per cent (based on weight of original wood chips) was obtained except with sodium bisulphite cooks which gave only 0.09 per cent screenings. The cooks of this chapter (See Table 2), however, in no case gave a screenings yield of more than 0.03 per cent (about 0.06 per cent on weight of pulp obtained). Our results, therefore, along the line of penetration of chips by the sulphite acid and its influence on the resulting screenings tend to confirm the importance attached to this stage of a sulphite cook by Miller in his report of December, 1925.

According to Miller, "At the start of the cook the first thing done is to make from 1 to 5 per cent of screenings in steaming the digester. One per cent is not bad, but 5 per cent is sometimes made."

Our method of injecting sulphur dioxide gas into the autoclave two or three times during the first hour may be condemned by some on the grounds that we are obtaining a free sulphur dioxide content in the cooking liquor much higher than that of the original acid the analysis of which is given in Table 2. In reply to this criticism we will say that up to the time a maximum pressure in a digester is reached the higher the content of free SO_2 the quicker will the digester reach that pressure and the more rapidly will bisulphite in the acid penetrate the entire structure of the chips.

However, after the maximum pressure has been reached it makes little difference in the progress of a cooking operation as to whether the original free SO_2 content was 5 per cent or 10 per cent, so long as the same temperature and pressure curves are followed. Bearing on this point, Miller states, "It means that if you start with a 10 per cent and a 7 per cent and a 5 per cent acid, with, say, 1.2 per cent combined and heat them separately at 75 pounds pressure, by the time you have reached the corresponding boiling temperature they will all be of approximately the same strength. In other words the temperature and pressure relations determine what concentration of sulphurous acid you have—absolutely in an ideal system, approximately in a commercial digester."

Importance of Lowering Pressure at End of Cook

In the last stage of a cooking process it has been found important to relieve a digester in such a way as to lower the partial pressure of the sulphur dioxide gas to 4 or 5 pounds before blowing. This reduction of pressure is of importance from the standpoint of maintaining a minimum of sulphur consumption. It is also of considerable importance (as will be shown in the last chapter) from the standpoint of pulp yield.

Thus with pressure maintained at the maximum (75 pounds gage) until the end of a cook and a maximum digester tempera-

ture of 148 degrees C. we have discovered that the increasing degree of acidity during the latter part of a cook, especially where straight calcium is used as the cooking liquor base, causes a decidedly greater destruction of the cellulose than is experienced when this tendency for increasing acidity is counteracted or minimized by lowering the digester pressure (and hence the partial pressure of the sulphur dioxide) from 75 pounds to 55 to 58 pounds, the temperature changes being kept the same in both cases. Without this fall in digester pressure during the cooking of spruce the yields have been lowered from 1 to 4 per cent (based on weight of original wood chips) in cooks where magnesium bisulphite or calcium bisulphite cooking acids were used, below the corresponding values where the same wood and cooking bases are involved and a pressure lowering followed as described.

We have obtained very satisfactory pulping action by following the pressure curves shown in Figures 4, 5, and 6, in which there is a gradual fall in pressure from 75 pounds to 55 to 58 pounds, starting down for the fifth hour.

As for the temperature curves which we have adopted as standard, it has been our policy to spend about 2 hours in reaching 110 degrees C. and then to rise from 110 to 148 degrees C. at a fairly uniform rate over a period of 6 more hours. This would be followed by an hour at the maximum temperature, making a total heating period of 9 hours (for spruce). It is of interest to note how nearly our experience has coincided with that of Miller[11] in which he remarks, "It has been found both by experiment and practice that a rise at uniform rate from 110 to 150 degrees C. over a period of 6 hours will produce a strong pulp of good yield."

TABLE 2
A TYPICAL SET OF SPRUCE SULPHITE COOKS

Kind of wood used in each cook—¾-inch spruce (S2) chips.
Moisture content of chips—10.0% for cooks 141, 142, 152 and 153
11.1% for cooks 174 and 175.
Weight (air dry) of chips used in each cook—65.00 grams.
Volume of cooking liquor for each cook—325 cc. (wt.—333.4 grams).
Length of each cook from start[9] of heating period till oven is opened and cooled—9 hours.

Cook No.	Cooking liquor base[10]	Strength of cooking liquor		Yield of pulp—based on weights of pulp and original chips in oven dry condition			Bleach (35% chlorine) requirement of pulp based on oven dry wt.	Loss on bleaching, based on weight of unbleached pulp
		Free SO_2	Comb. SO_2	Screened pulp	Screenings	Pulp and screenings		
		%	%	%	%	%	%	%
141	Calcium	3.37	1.02	49.6	None	49.6	13.3	3.1
142	Ca-Mg.	3.31	1.06	49.7	None	49.7	13.6	2.6
152	Ca-Mg.	3.31	1.06	49.6	None	49.6	14.0	1.2
153	Ca-Mg.	3.31	1.06	49.9	None	49.9	14.5	2.4
174	Calcium	4.31	1.12	50.8	0.01	50.8	13.7	3.5
175	Ca-Mg.	4.27	1.13	50.8	0.03	50.8	12.8	3.2

TABLE 2
(Continued)

Cook No.	Total solid content of waste sulphite liquor	Total weight of undiluted waste liquor	Calcium and magnesium free hydrocarbon & sulphur compounds in waste liquor[10]	Reducing material (calc. as invert sugar) in waste liquor	Reducing material (calc. as invert sugar) based on weight total solids in waste liquor	Reducing material (calc. as invert sugar) based on weight of oven dry chips
	%	g.	%	%	%	%
141	10.85	341.7	60.1	2.79	25.72	16.3
142	10.92	343.1	61.2	3.34	30.62	19.6
152	11.15	340.6	62.0	3.31	29.70	19.3
153	11.15	339.0	61.7	3.47	31.11	20.1
174	11.47	343.4	64.2	2.21	19.29	13.1
175	11.26	343.2	63.7	2.92	25.90	17.4

At the completion of a cook the doors to the electric oven were opened and an electric fan at low speed cooled the autoclave to a little below 100 degrees C. The excess gas pressure was then slowly released. Without further cooling, the autoclave was opened and the pulp specimens removed and kneaded one at a time.

Treatment of Pulp After Cooking

On removing one of the pulp bottles from the autoclave it would be noticed that the pulp fibers still cluster together in chip form. While still hot the spent liquor is drained off, the pulp chips are removed to a two liter beaker and sufficient boiling water is added to give a very thick consistency when the chips are resolved into a magma of pulp by vigorous stirring with a wooden rod. Following a properly made sulphite cook the pulp chips can be completely disintegrated after a few minutes of stirring. This is a mechanical action which accomplishes the same result without beating as is obtained in commercial practice by blowing the contents of a digester against a target in a blow pit.

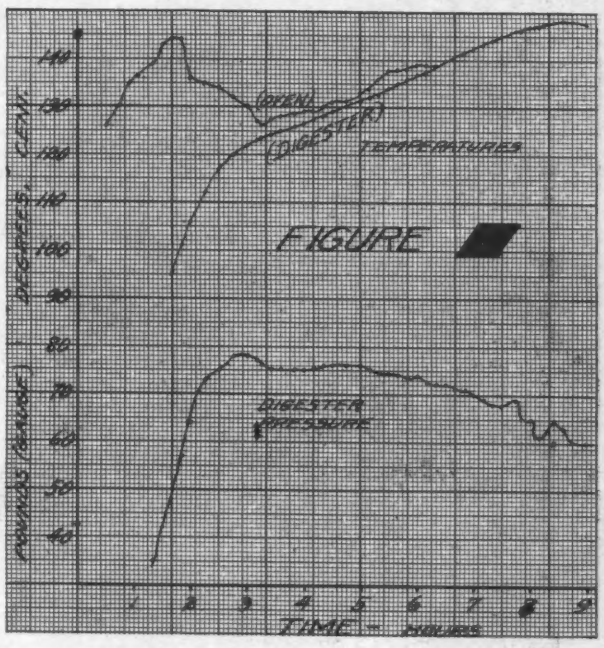

FIG. 5

Sulphite Cooks using ¾ inch Spruce (S2) Chips, Cook Base in Acid No. 91 Calcium, No. 92 Magnesium, No. 95 Sodium. Date of Cooks 7/30/25.

The pulp is then transferred to a glass jar of about seven-liters capacity and is washed with several jars of water at 50 degrees C. followed each time by fitration on a paper covered funnel of the Buchner type.

Wood Used

All wood used in the experiments was obtained from a log of spruce about 4 feet in length and averaging 9¾ inches in diameter. This log was sent from Rumford, Maine, through the courtesy of Mr. T. F. Spear, General Superintendent of the Oxford Paper Company. The wood in this log was found to have a specific gravity of 0.464 (oven dry condition), corresponding to a weight of 23.95 pounds per cubic foot solid wood. It was received at the Oxford Research Laboratory, Brooklyn, on December 8, 1924 and for the purposes of identification was designated S2. The number of annual rings to this log was sixty-two.

A third of this log was chipped so as to give chips ½ inch in

[9] In cooks where a mixed solution of calcium and magnesium bisulphites are used the two bases have been present in equimolecular amounts. This same effect would be obtained by preparing a sulphite acid, using for the base a dolomitic lime, having 40.0 per cent magnesium oxide and 56.0 per cent calcium oxide.

[10] These figures are based on the oven dry weight of original chips and represent all wood substance (except what little is lost as gas) dissolved in the sulphite liquor plus the sulphur, hydrogen and oxygen combined with it. These components are, necessarily, those stable below 105 degrees C.

[11] loc. cit.

[20] "Apparatus and Methods for Experimental Investigations on the Production of Soda Pulp," by D. E. Cable, R. H. McKee and R. H. Simmons. Paper Trade Jour. 82, No. 8, pp. 158-161; Paper Mill 49, No. 9, 138, 140, 142, 144 (Feb. 27, 1926); Tech. Assoc. Papers 9, 30-32 (1926); C. A. 20, 1517.

length (with the grain) and the rest was chipped so as to give chips ¾ inch in length, according to our standard method of preparing wood chips as described in our report[20] of February 25, 1926. The ¾ inch spruce chips were used exclusively in all work described in this thesis.

Method of Determining Yield of Pulp and Screenings

After the thorough washing of a given specimen of crude pulp, all shives and uncooked woody fragments were separated from the good pulp by a screening operation. For this purpose we used a small diaphragm screen (0.008-inch slots) manufactured by the Wisconsin Foundry and Machine Company when there was found to be an appreciable amount of screenings mixed with the good pulp. However, in all the cooks described in this chapter there were either no shives or woody fragments or they were so few in number that no machine screening was necessary. In only two

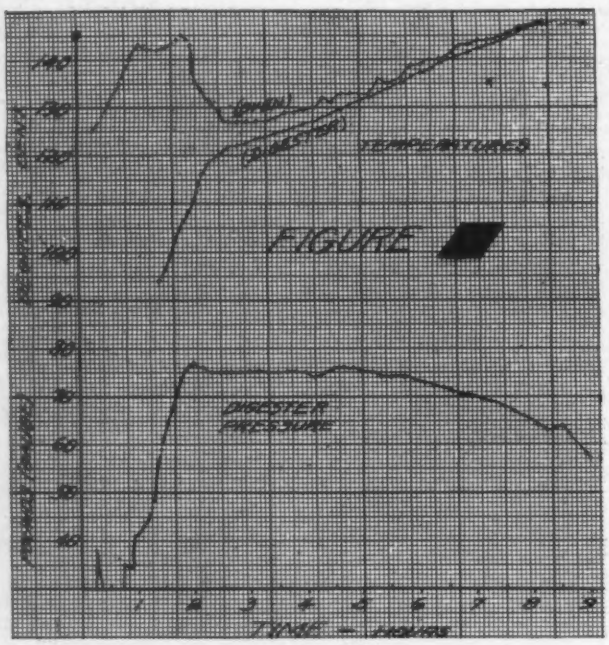

FIG. 6

Sulphite Cooks using ¾ inch Spruce (82) Chips, Cook Base in Acid No. 141 Calcium, No. 142 Ca-Mag., 143 Sodium. Date of Cooks 9/9/25.

of the raw pulps could be found as much as half a dozen shives or woody residues and they were separated from the pulp by hand with the aid of a needle.

After the final washing and filtration each lot of pulp was pressed firmly into a disk-shaped mat on a largest sized Buchner funnel, using a filter paper which had been weighed with a blank filter paper of the same size. The pulp disk after hanging up to dry in the air for 24 to 36 hours was weighed as was also the filter paper on which it had been formed. The weight of the pulp fibers, thus, adhering to the final filter paper was obtained, allowing for loss or gain in weight of the filter paper due to changing humidity conditions from day to day. This correction factor was determined by reweighing the blank filter paper at the same time that weights of the used filter papers were found. Any pulp fibres clinging to the filter papers before the last filtration were easily washed with a stream of water back into the jar containing the bulk of the pulp. As far as possible all the washings were made with distilled water to avoid any gain in weight of pulp due to the acquisition of finely divided suspended matter which was invariably found in the tap water, despite the high purity of New York water.

The weight of each air-dried disk of pulp was reduced to the oven dry basis by taking a quarter of the disk (weighed immediately after getting the air dry weight) and running a moisture determination with drying in a large, low form glass weighing bottle, placed in an oven, heated to 105 degrees C. for a period of 4 to 7 hours.

A *moisture determination* was made *of the air dry spruce chips*, by weighing approximately 40 grams of chips in a cylindrical wire basket and then drying at 105 degrees C. for 24 to 48 hours. All pulp yield figures given in Table 2 are based on the equivalent weights of oven dry pulp and oven dry chips.

The *screenings* from each lot of pulp whether obtained by hand picking or screening were washed several times with water, allowing a day for contact with each wash before the following filtration. They were then filtered on a weighed filter paper and after being allowed to dry in the oven for 24 to 48 hours at 105 degrees C, they were weighed. The yield of screenings as for pulp is based on oven dry weights.

Determination of Bleach Consumption and Loss on Bleaching

The methods used for estimating the bleach consumption was a slight modification of the method given in "The Manufacture of Pulp and Paper," Vol. III (Revised edition—1927). Section 8, p. 46. Our standard bleach liquor contained 15.3 to 22.4 grams of available chlorine per liter and 1.00 gram of free lime (CaO) per liter, giving a normality ratio of 1 part of lime (free) to 12.1—17.8 parts of available chlorine. This lower strength is approximately the free lime to chlorine ratio (1 to 11.8) recommended by Bergman, Almberg and Ekholm[21]).

In each test it was our aim to add from 70 to 100 percent more bleach than would be consumed by the pulp sample being tested, over a period of three hours. The weights computed to oven dry basis of pulp before and after bleaching gave data as to the losses on bleaching.

Determination of Total Solids in Sulphite Waste Liquor

As mentioned in the paragraph Treatment of Pulp after Cooking it was our custom to pour off all the free water *or spent sulphite liquor* before the pulp chips are broken up into a magma of pulp by vigorous stirring. The undiluted waste liquor was poured into an Erlenmeyer flask and weighed. The weight of waste liquor adhering to and remaining in the pulp chips was determined, allowing for a deduction of the oven dry weight of the washed pulp later obtained from the gross weight of pul and soaked up liquor.

For estimating the total solids content of the waste liquor the following procedure was followed:

A 4 gram quantity of the sulphite waste liquor is weighed in a 30 x 70 mm. weighing bottle. It was evaporated half an hour on a water bath and after further drying at 105 degrees C. for 10 hours, followed by cooling in a desicator, the residue is weighed in the usual way.

Determination of Reducing Sugars in Sulphite Waste Liquor

The amount of reducing materials(calculated as invert sugar) present in the sulphite waste liquor was determined by following the Munsen and Walker Method for sugar analysis as given in the 4th edition of "Food Inspection and Analysis" by Leach and Winton, (p. 622).

Experimental Results

The characteristics of pulp and waste liquors which have been studied in our investigation of the sulphite; cooking of spruce in certain respects cover the important points mentioned in Hagglund's report, "Comparative investigation on yield and properties of pulp prepared by the sulphite method from moist and air-dry pine woods from different parts of the tree."[22] Hagglund has gone into much greater detail than we have in recording the chemical and physical properties of the resulting pulps and waste liquors. His translated article and articles by Sherrard and

[21] Paper 31, No. 23, 9-12 (March 28, 1923), 31, No. 24, 9-11 (April 4, 1923).
[22] Zellstoff und Papier 5, No. 3, 81-83 (Mar., 1925); Papier-Fabr. 23, No. 17, 279-284 (Apr. 26. 1925); trans. by C. J. West in Paper Trade Jour. 81, No. 2, 45-47 (July 9, 1925).

Suhm (I. & E. C. *14*, No. 10, p. 931; *17*, No. 2, p. 194) are probably the first to touch upon sugar yields obtained in experimental waste liquors. This is a factor in which we have been interested on account of the possible utilization of sulphite waste liquor for obtaining alcohol at the Rumford Mill of the Oxford Paper Company in the near future.

In the testing of the experimental sulphite pulp samples we have substituted our method of measuring the Bleach Consumption for Hagglund's determination of the Chlorine Factor. These determinations are undoubtedly related to each other, but it would undoubtedly be a mistake to say that the bleach consumption figure of a pulp is directly proportional to its chlorine number. For practical purposes the former is without question more essential in the translation of laboratory results into mill operation than is the latter.

Hagglund in his investigation has used pine wood split into pieces 3 to 4 cm. long with an average cross section of about 4 x 4 mm. For each sulphite cook he takes 30 grams of absolutely dry wood which is less than half the amount in each of our cooks. His cooking is done in bomb tubes and, consequently, he has no means of relieving pressure during the progress of a cook. His temperature curve corresponds very well with the ordinary Mitscherlich cook.

It is interesting to note that in amount of reducing sugars obtained in the sulphite waste liquors Hagglund's figures range from 13.82 per cent to 23.16 per cent, based on the original weight of wood. As seen in Table 2 of this chapter our sugar yields varied from 13.1 per cent to 20.1 per cent.

Another interesting point is revealed when one compares our yields of reducing sugars obtained in cooking spruce wood by the sulphite process with yields of 18.06 to 22.82 per cent which were obtained by Kressman[32] in hydrolizing white spruce sawdust with a 1 to 2 per cent solution of sulphuric acid in water at a steam pressure at 95 pounds (gage), maintained for 20 minutes.

The data on yield of pulp given in Table 2 is presented in this chapter to show how close it is possible to obtain check results when cooking the same wood on different days, using as nearly as possible the same kind and strength of cooking liquor, the same temperature and pressure curves and the same standard procedure throughout the cook and the subsequent pulp treating operations.

Thus, comparing cook 141 and 174 where calcium bisulphite was used it is seen that the yields of screened pulp and total pulp checked within 1.2 per cent of each other. Comparing cooks 142. 152, 153 and 175 where dolomitic type of liquor was used, the highest yield amounted to but 1.2 per cent more than the lowest yield.

As for the bleach requirements of the pulps it will be seen that the value for pulp 141 checked within 0.4 per cent of the value for pulp 174. In the other group of pulps the maximum value was 1.7 per cent higher than the minimum value. In all these cases the bleach requirement is slightly below the average bleach consumption of 15-17 per cent now experienced at the Rumford Mill of the Oxford Paper Company for manufactured sulphite pulp. Each of the bleached pulps from cooks listed in Table 2 were slightly whiter in color than the Oxford mill standard bleached sulphite pulp of December2, 1925.

Miller[31] has stated that spruce wood cooked in his experimental digester, using a straight calcium cooking liquor and under most favorable conditions of acid concentration, temperature and pressure variation has given a pulp yield of 50.5 per cent (56.1 per cent air dry pulp, based on oven dry weight of chips). Our highest pulp yields for both calcium and dolomitic base cooks equalled the value given by him, although our average yields fell slightly (less than 1 per cent) below his.

[31] loc. cit.
[32] Jour. Ind. and Eng. Chem. 7, 920-922 (Nov., 1915).

Summary of Chapter I

1. The economic importance of sulphite pulp as compared with other kinds of wood pulp manufactured in the United States is indicated.

2. Attention is called to the eleven excellent contributions (of the past five years) by Miller and Swanson on the subject, "Chemistry of the Sulphite Process."

3. A systematic search after new and improved processes and equipment in the making of pulp and paper is shown to be a vital and important function of individual and progressive manufacturers as well as of certain departments of the Federal or State Government.

Summary of Chapter II

1. The possibility of one man making three experimental sulphite cooks under identical temperature and pressure conditions of cooking and of carrying out all steps of a sulphite pulping investigation unassisted are advantages which recommend the use of our Oxford experimental equipment and methods of operation.

2. This equipment and the standard methods of operation and of testing are fully described.

3. One unusual but important step in the making of a regular experimental sulphite cook involves the injection of compressed sulphur dioxide gas into the vapor section of the digester during the first hour of a cook to aid the penetration of sulphite acid into the chips.

4. Data contained in this chapter would indicate that the determination of pulp yields is accurate within a maximum variation of about 1.2 per cent.

5. Wood chips cooked in our equipment in 65 gram quantities give approximately the same yield as the same wood cooked under similar conditions and weighing five or six hundred times as much.

6. The yields of reducing material (primarily wood sugars) in the experimental sulphite waste liquors for six typical cooks are reported. These yields (13 to 20 per cent) are very similar to the yields of reducing material obtained from the same kind of wood by means of hydrolysis with dilute sulphuric acid.

7. The kind of wood used in all of these thesis experiments is described in detail.

(*To be continued*)

International Appeals Brownville Assessments

[FROM OUR REGULAR CORRESPONDENT]

BROWNSVILLE, N. Y., September 24, 1927.—Charging that they were being over assessed on property in the town of Brownville the International Paper Company, and the International Hydro-Electric Corporation, of New York City, has obtained a writ of certiorari to compel a review of their case and the assessment rolls of the town. The action is brought against Louis H. Lonsdale, Clifton S. Dano and George M. Brown, assessors of the town of Brownville. The Paper company is represented by Cobb, Cosgrove, Harter and Wright and Attorney C. A. Phelps represents the town of Brownville.

According to verification made by the representative of the paper and power company on September 15, 1927, the assessors had fixed the valuation of real property owned by them in the town, mill "B" at $236,000 and mill "C" at $230,000. The plaintiffs allege that a notice had been received by them from the assessors that a review would be held on August 15 and representatives of the petitioner attended the review. They objected to the valuation as excessive and made application to have the assessments corrected. They claimed that the actual value should have been about $100,000 for mill "B" and $180,000 for mill "C." It was pointed out that in 1926 a bad fire broke out in mill "B" and damage amounting to $43,248 resulted. This loss was not credited, but the assessment on this mill was made the same as in 1926.

The petitioners assert that the assessments on their property are much higher than those placed on their other real property in the town of Brownville and will ask to have the assessment roll books opened to make comparisons.

The writ was issued by Supreme Court Justice Edward N. Smith.

Steam For Process and Power

In the leading article of the September number of *Chemical and Metallurgical Engineering* is a survey of the fuel used to generate steam for process heating and power in the various chemical industries in which pulp and paper manufacture is included.

Wide Variation in Practice

In regard to pulp and paper, the article says:

The pulp and paper industry shows a wide variation in practice among the plants investigated. One plant, generating 750,000 lb. of steam per day, uses 485,000 lb. of live steam for power generation; 175,000 lb. of live steam and 200,000 lb. of exhaust steam per day for process heating; 75,000 lb. of live steam and 20,000 lb. of exhaust steam per day for building heating, and 15,000 lb. of live steam for auxiliaries. This plant purchases no power.

Another paper mill uses 150,000 lb. of steam for power generation each day. This plant uses 85,000 lb. of the exhaust steam for process heating and heats the buildings with whatever of the remainder is needed (about 10,000 lb.); the rest of the exhaust being used in the low-pressure or condensing part of the turbines. This plant also purchases no power.

A large book-paper plant generates 5,300,000 lb. of steam per day. Of this 400,000 lb. are used in power generation and 4,200,000 lb. are used in power generation and 4,2000,000 lb. are used for process heating. In addition, 700,000 lb. are bled from the turbines for process heating at a pressure lower than the initial pressure. About 150,000 kw.-hr. are also generated for this plant daily by a hydro-electric station owned by the plant.

A plant manufacturing wrapping paper uses 900,000 lb. per day of live steam for power generation. This plant also uses about 1,000,000 lb. of live steam and 1,000,000 lb. of exhaust steam per day for process heating, part of the exhaust steam being bled from the turbines at a higher pressure than the turbine back pressure. This plant purchases no power.

A plant manufacturing glass has 1,500 boiler hp. installed, producing 1,250,000 lb. of steam per day. Of this, 30 per cent is used for power generation, with 10 per cent low pressure steam also used in the mixed-flow turbine. The live steam process load is 25 per cent. Building heating takes 300,000 lb. of exhaust steam per day. Steam-driven equipment such as compressors and pumps uses 45 per cent of the live steam. No power is purchased.

Diversity in Steam and Power Generation

Perhaps the clearest inference from these examples is the extreme diversity that occurs in steam and power generation and utilization in the chemical engineering industries. No two of these plants show the same set-up and it can be safely said that no two plants can be found in that whole industrial group that are the same. Such differences are as much a result of the lack of good engineering in these plants, as to power generation, as they are due to essential variations caused by the requirements of the industry.

A Common Characteristic

However, there is one characteristic of practically all of these plants; they use a comparatively large amount of steam for process heating, with a somewhat smaller amount of steam used for power generation. It is this fact, coupled with the possibility of using the exhaust from the power units for process work, that gives the chemical engineer his legitimate interest in steam and power generation. If steam enters largely into his processes, then he must be concerned to see that it is produced at the lowest possible cost, as well as used economically. Since power can be generated at a low cost from the steam that is to be used at low pressure, he has the further opportunity of reducing the cost of his processes by getting the power to operate them at a low figure, as a byproduct, one might say, of the heating processes. Both of these economies can be attained only by starting at the boiler plant and, with as much care as would be used by the engineer of a central station, making sure that the generation of the steam and power is as economical as can be, allowing for the limitations of the particular plant.

Opportunity for Cost Reduction

Herein lies one of the greatest opportunities to be found today for cost reduction in the chemical engineering industries. Some few plants are obtaining both process steam and power at the lowest attainable cost, but such plants are indeed few. It is possible in almost all plants to make improvements in steam and power generation that will result in savings.

With the article a number of interesting charts are given showing in graphic form the comparison of the use of fuel and the boiler-horsepower equivalent for power generated and for process steam supplied, which are worthy of study.

In the same number are articles by Theodore Maynz on "Modern Trends in Steam Generation"; "Modern Developments in the Steam Piping Field," by A. B. Williams, and C. W. Welch; "Byproduct Power from Steam Turbines," by C. B. Campbell; and "Application of Steam Accumulators," by Grover Keeth, all of which could be studied with interest by paper mill engineers.

Preparation of Chips for Sulphite

SPECIAL INQUIRY No. 82

1. In cooking hemlock chips for sulphite pulp, please note the order of desirability of the following sizes of chips:
   a. Retained on ¾ inch screen.
   b. Retained on 7/16 inch screen.
   c. Retained on 3/16 inch screen.
   d. Through 3/16 inch screen.
2. What effect does the "sawdust" (chips through 3/16 inch screen) have on yield and strength of the pulp?
3. Which is the more desirable layout and why?
   a. Chipper, followed by crusher, screen and rechipper.
   b. Chipper, followed by screen and chip crusher which sends the chips back for rescreening.
4. Please criticize the following hemlock chips:

On ¾ inch	20 per cent
On 7/16 inch	48 per cent
On 3/16 inch	26 per cent
Through 3/16 inch	6 per cent

5. Do chip crushers tend to make "sawdust"?
6. Is the flat reciprocating or the circular revolving screen the more efficient for chips?

The answers to these questions will be compiled in a special report, and those who contribute information will receive a copy.

W. G. MACNAUGHTON, Secretary, TAPPI,
18 East 41st Street, New York.

Roll Edge Protection

SPECIAL INQUIRY No. 83

Inquiry is made of paper manufacturers and publishing houses of the best means of protecting the roll ends of book and fine paper from damage in shipment such as by the use of a heavy strip of strong fiber inside the wrapper around the end of the roll.

If fiber strip is used please give details to indicate its weight, the length and width for rolls of a specified diameter, as well as the cost.

If other methods of protecting roll paper are used, details will be appreciated with a discussion of the protection of rolls, particularly of fine writing paper.

A transcript of the responses, in blank, will be sent as a special report to all who contribute to the inquiry. Send replies to

W. G. MACNAUGHTON, Secretary, TAPPI,
18 East 41st Street, New York

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

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Conducted by THOS. J. BURKE, C.A., Sec-Treas

Lower Costs Through Budget Operation*

By Harold Vinton Coes [1]

The budget is a means for accomplishing certain very definite results in manufacturing provided the proper methods are adopted and followed. From an unusually successful experience in reducing costs and controlling operation, Mr. Coes writes of his tested and proved methods, which may be adopted by anyone as certain to bring equally worthwhile results. He testifies that budget procedure has enabled him to reduce operating expenses, factory burden, sales and administrative expenses, and maintenance expenses: to regulate production with sales demand; to regulate and reduce inventories; to regulate bank loans; to control expenditure for capital account.

Practically all budgets are based on, and of necessity must be based on, the sales budget or quota. Sometimes, in some types of business, this volume cannot be stated in units, such as pounds, tons, feet, cases, dozens, gross, etc., as well as in dollars, but must be stated in dollars per class of product. This is because the individual sizes, styles, units, etc. in a given product classification may vary, and generally do vary, with respect to the other items in the group; again new items may be added and old items dropped, but whatever the nature of the business and its products, the sales quota is the starting point.

It is impossible in many more cases than it is possible, to make a sales or volume forecast for the year that is not subject to fluctuations, wholly or in part, beyond the control of the individual business. Therefore, when the yearly forecast is broken down by months, or any other period, in accordance with the particular business's experience as to its volume curve for the year, it is generally necessary to narrow the forecasting period down, as a practical matter, to a shorter period than the year; as low as a week in advance in some cases, and then to adjust the prevoiusly determined budget up or down, as the facts warrant.

R. H. Heberling of the Business Research Corporation, speaking before the American Management Association, recently remarked: "Seasonal sales mean valleys and peaks of distribution. In the slack season production will exceed sales. The reverse will hold true when sales reach the peak. When market conditions are uncertain and variable it may be desirable to shorten the budget period to maintain reasonable accuracy in forecasting. In one company the peak of inventory came in the middle and late summer; the peak of collections was reached in the late winter months. With the budgeting period one year, by months, the collected revenue was forecast within a 5 per cent degree of accuracy by months, and one per cent error for the year. From the experience of different types of business it would appear that the budget should be shortened when the hazard is great and lengthened as the business hazard decreases."

Before the budgets regulating inventories, production, expenses, etc., can be properly determined and adjusted to the fundamental budget, it is desirable to make certain studies to determine the fundamental relationships between properly related factors of the business. Blessed is the concern that has its essential facts and

TABLE 1
FUNDAMENTAL OPERATING RELATIONSHIPS

	1922 %	1923 %	1924 %	1925 %	1926 %	Max. or Min. %
Ratio of Cost of Sales / Net Sales	79.9	79.2	78.1	77.8	80.1	75
Ratio of Mfg. Expense (Burden) / Net Production	29.4	24.0	26.8	26.1	23.5	22
Ratio of Mfg. Expense / Net Sales	24.5	22.0	24.3	24.7	20.2	20
Ratio of Raw Material Inventory / Net Production	40.1	42.0	41.9	39.8	38.9	35
Ratio of Process Inventory / Net Production	30.1	32.0	31.0	29.9	29.2	26
Ratio of Direct Material / Net Sales	37.5	35.2	37.2	38.5	39.1	35
Ratio of Direct Labor / Net Sales	23.4	22.8	20.9	21.7	22.0	20
Ratio of Indirect Labor / Direct Labor	47.0	46.5	46.1	45.8	45.2	40
Ratio of Finished Goods Inventory / Net Sales	10.8	10.4	10.1	10.5	10.0	10
Ratio of Total Inventory / Net Sales	24.3	24.0	23.8	24.2	23.0	20
Ratio of Fixed Expense / Total Mfg. Expense	28.1	28.3	27.9	27.2	27.5	25
Ratio of Working Capital / Net Sales	35.1	34.8	35.5	34.2	33.1	30
Ratio of Gross Profit / Net Sales	21.1	20.9	21.9	22.2	19.9	25
Ratio of Selling Expenses / Net Sales	10.9	11.0	11.4	12.2	12.5	11
Ratio of Net Profit / Net Sales	4.3	4.7	5.1	5.5	3.9	5

* Manufacturing Industries.

[1] Vice-President and General Manager, Belden Manufacturing Company; Vice-President, Amer. Society of Mechanical Engineers.

statistics so recorded or entered, and preserved, that the proper tabulation of the essential data can be readily determined, and trends and tendencies obtained graphically. Table 1 shows a number of these relationships.

In every business there will be found a proper relationhsip of these items if the various divisions of the business are in balance. If the inventories are out of balance, the actual ratio will be higher than the correct or budgeted one. If proper material-handling devices are not in use, then the indirect labor will bear an incorrect relationship to the direct labor, and the manufacturing expense will be higher than the business should stand. The gross profit will be lower and so will the net, as a rule. If collections are behind, the credit policy is bad, or sales terms faulty, then the working capital ratio will be out of line.

Therefore, it is essential that we first determine what the proper fundamental relationships are for the various items it is proposed to budget, for these are the initial points of control.

I have by no means enumerated all the relationships that exist or that can be properly utilized, but I have set forth a number of those that do exist in most manufacturing businesses. Needless to say, the figures or percentages given are illustrative only, and are hypothetical.

From past experience, then, and with the above fundamental relationships and limits set, the individual budget can be set up. The management should give the various department heads and junior executives the general policy for budgeting, and the fundamental relationships of the various factors to be considered, with their limits, for their use in setting up the individual budgets. They should then be permitted to set up and work out these individual budgets.

After these have been set up, they should be co-ordinated with the master budget, and such adjustments made as subsequent comparison proves advisable to meet the conditions and requirements of the total or master budget.

Many executives make two errors due to a misconception when

SCHEDULE_____

MANUFACTURING EXPENSE

DEPARTMENT_____ MONTH_____ 192__

ACCT. No.	NAME	THIS MONTH	PER $100 PROD.	LAST MONTH	PER $100 PROD.	BUDGET	PER $100 PROD.	CUMULATIVE ACTUAL	PER $100 PROD.	CUMULATIVE BUDGET	PER $100 PROD.
201	Factory Supervision										
202	Foremen & Assist'ts										
203	Inspectors										
210	Clerical Labor										
211	Cost & Payroll Dept.										
212	Production Dept.										
213	Employment										
220	Other Labor										
221	Janitors, Watchmen & Elev.										
226	Machine Set-Up										
227	Overtime—Bonus										
228	Allowances										
229	Idle Time										
230	Development Engineering										
231	Plant Engineering										
241	Fuel Consumed—Gas										
242	Water										
243	Lubricants										
244	Non-Durable Small Tools										
245	Factory Office Supplies										
246	Miscellaneous Shop Supplies										
247	Steam										

FIG. 1
Form for Manufacturing Expense Budget.

SCHEDULE_____

MANUFACTURING EXPENSE

DEPARTMENT_____ MONTH_____ 192__

ACCT. No.	NAME	THIS MONTH	PER $100 PROD.	LAST MONTH	PER $100 PROD.	BUDGET	PER $100 PROD.	CUMULATIVE ACTUAL	PER $100 PROD.	CUMULATIVE BUDGET	PER $100 PROD.
250	Unassignable Frt.-Exp.										
260	Employees' Service										
270	Accident Compensation										
281	Defective Workmanship										
282	Defective Workmanship Cr.										
283	Other Losses Due to Errors										
291	Purchasing Dept.										
292	Stores—Rec. Department										
293	Finished Stock Department										
294	Shipping Dept.										
295	Labeling Dept.										
296	Rewind Dept.										
301	Rearrangement of Equip.										
303	Traveling Expenses										
305	Garage										
306	Shop Electric Plant										
307	Instruction of Apprentices										
308	Unassignable Testing Expense										
309	Other Mfg. Expense										
310	Spool Expense										
311	Foreign Spool Expense										
312	Laboratory										
313	Inter-Plant Exp'se										
314	Assn. Dues and Memberships										

FIG. 2
Form for Manufacturing Expense Budget.

SCHEDULE_____

MANUFACTURING EXPENSE

DEPARTMENT_____ MONTH_____ 192__

ACCT. No.	NAME	THIS MONTH	PER $100 PROD.	LAST MONTH	PER $100 PROD.	BUDGET	PER $100 PROD.	CUMULATIVE ACTUAL	PER $100 PROD.	CUMULATIVE BUDGET	PER $100 PROD.
321	Insurance										
322	Taxes										
323	Rentals										
324	Depreciation										
330	Development										
340	Power Plant Oper. Labor										
350	Power Plant Supplies										
360	Power Plant Inc Oper. Exp.										
370	Power Plant Maintenance										
390	Power, Heat & Light Purchased										
410	Maintenance Land										
420	Mainten'ce Bldgs.										
430	Maint. Structures										
440	Maintenance Heat. Vent. Wire.										
450	Repairs to Mach Elec. Furn.										
451	Replacements & Improvements to Mach. Elec. Furniture										
480	Maint. Automobiles										
	TOTAL										
	Budget Correction for Variation in Productive Labor										
	Corrected Total										
	% Actual Expense to Budget Expense										

FIG. 3
Form for Manufacturing Expense Budget.

contemplating the application of a budget procedure to the control and regulation of their business:

1. They have mental indigestion because they assume that a complete system of budgeting must be inaugurated.

2. They have fluctuations in their sales volume due to seasons or other causes, and they assume that the budget is inflexible.

With regard to the first story, the important fact to bear in mind is that the way to "resume is to resume"; the way to "start is to start." It is not so important where you start as it is to start. Pick out the particular phase of your activities that you desire to control initially. It may be the budgeting of indirect expenses, the budgeting of sales, or inventories, or selling expense, but whatever it is try one phase first. Educate one group of your organization initially. Get this working smoothly and then go on to the next and you will meet with success. If you try to do it the other way round, while it can be done and done successfully, yet it is much more difficult and usually requires expert outside professional assistance to do it quickly and effectively.

The second error is usually committed because flexibility is not provided, and when actual results are compared with a predetermined budget, but not adjusted to meet variations beyond the management's control, everyone is disgusted and the "die hards" say, "There, I told you so. That is all right for so and so, but our business is different. We cannot do that, etc., etc.;" whereas the difficulty is due to a misconception and to faulty budgeting technique rather than to any thing fundamentally wrong with the general principle.

Suppose that we set up a table for comparative results of operation, taking into account the principal factors, and their variation due to changing volume, such as is presented herewith by Messrs. Bigelow, Kent, Willard & Company. (See Table 2).

The corresponding operating capacities are shown in Table 3.

One hundred percent capacity is usually assumed to be that capacity which is obtained when correcting 100 per cent capacity for interruptions to production, due to operators out, machines down for repairs, idle time, etc., or the normal interruptions. In other words, suppose a study shows that when these interruptions to production are at their irreducible normal minimum, this represents 85 per cent of theoretical full production. Then this 85 per cent is taken as the practical 100 per cent capacity and the operation is worked out from that point.

Break-Even Point

Suppose then that, after these various items were worked out, it should show, as was assumed in this case, that the break-even point was 58 per cent of capacity. Bear in mind, however, that this break-even point is never, as a rule, a fixed point. It can move up or down for a number of reasons. If the competition is severe, the gross margin will decrease, if expenses and cost of production remain the same and the point will move up. If cost production by the substitution of lowered-price materials, more effective use of materials, etc., increased application of power, mechanization of the production equipment, is lowered and the selling prices remain the same, the point will move down. So this position of the break-even point must be periodically checked to determine its position relative to the 100 per cent capacity.

Assume for the moment that prices are stabilized, and the break-even point of the business under consideration is 58 per cent. Now for each increment of $100,000 of sales volume certain results from

TABLE 3
PERCENTAGE RELATIONSHIP

Volume	Per cent capacity	Capacity increment
$ 500,000	41.6%	....
600,000	50.0%	8.4%
700,000	58.3%	8.3%
800,000	66.6%	8.3%
900,000	75.0%	8.4%
1,000,000	83.3%	8.3%
1,100,000	91.6%	8.3%
1,200,000	100.0%	8.4%

TABLE 4
CORRESPONDING OPERATING CAPACITIES IN PER CENT

	Estimated	Actual
Sales	$900,000	$800,000
Per cent capacity	75.0%	66.6%
Materials	37.2%	37.8%
Direct labor	26.0%	26.5%
General factory expense	16.5%	17.0%
Cost of sales	79.7%	81.3%
Gross profit on sales	20.3%	18.7%
Selling expenses	7.1%	7.3%
Selling profit	13.2%	11.4%
Administrative expense	6.5%	7.0%
Operating profit	6.7%	4.4%

operation are obtained, if the various items making this up are regulated and controlled.

Suppose for a given month the sales budget was forecast as $900,000, or 75 per cent of capacity, with the corresponding relationship of the other factors, whereas before the end of the month

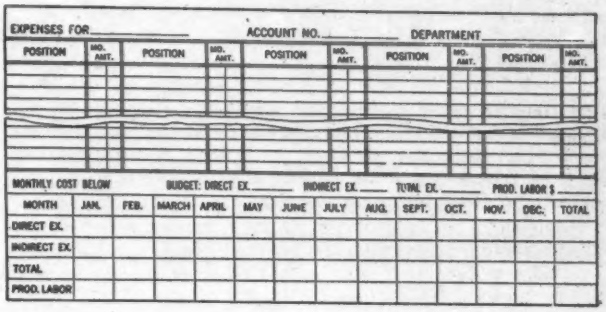

FIG. 4
Form for Summary of Expenses and Production Labor.

preceding it was apparent that the volume of new business coming in was at the rate of $800,000, or 66 2/3 per cent of capacity. The variable items in the several budgets, sales budget included, should then be adjusted accordingly and the various items regulated to suit the situation imposed by the new conditions, providing it is determined that this is permanent.

Then from table 2 will be seen that the percentage relationship between the various items of direct costs, indirect costs, profit and loss, are as shown in Table 4.

Figs. 1 to 4, inclusive, show forms used for the regulation of the manufacturing expense budget.

Wilder Mill Closed Down

GLENS FALLS, N. Y., September 24, 1927.—The mill of the International Paper Company in Wilder, Vt., has been closed down for an indefinite period, it was learned here this week. The mill, operating under normal conditions, employed three hundred hands but for some time past has been running short handed with about one hundred employees.

TABLE 2
COMPARATIVE RESULTS OF OPERATIONS FOR DIFFERENT SALES VOLUMES

Sales (thousands of dollars)	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
Sales (percentage)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Materials	40.3	39.4	38.5	37.8	37.2	36.7	36.7	36.7	36.7	36.7	36.7	36.4	36.1	35.8	35.5	35.2
Direct Labor	28.0	27.5	27.0	26.5	26.0	25.5	25.5	25.5	25.5	25.5	25.5	25.0	24.5	24.0	23.5	23.0
General Factory Expense	20.0	19.0	18.0	17.0	16.5	16.0	15.5	15.0	14.5	14.0	13.5	13.0	13.0	13.0	13.0	13.0
Cost of Sales	88.3	85.9	83.5	81.3	79.7	78.2	77.7	77.2	76.7	76.2	75.7	74.4	73.6	72.8	72.0	71.2
Gross Profit on Sales	11.7	14.1	16.5	18.7	20.3	21.8	22.3	22.8	23.3	23.8	24.3	25.6	26.4	27.2	28.0	28.8
Selling Expenses	80.0	7.7	7.5	7.3	7.1	7.0	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.2	6.1	6.0
Selling Profit	3.7	6.4	9.0	11.4	13.2	14.8	15.4	16.0	16.6	17.2	17.8	19.2	20.1	21.0	21.9	22.8
Administrative Expense	10.0	9.0	8.0	7.0	6.5	6.0	5.9	5.8	5.7	5.6	5.5	5.4	5.0	5.0	5.0	5.0
Operating Profit	6.3*	6.2*	1.0	4.4	6.7	8.8	9.5	10.2	10.9	11.6	12.3	13.8	15.1	16.0	16.9	17.8

* Loss.

Some Common Problems of Allied Industries*

By Hugh P. Baker, Sec., American Paper & Pulp Association

As the cotton and linen industries and the forest are the foundation of the paper industry in that they provide raw materials for the manufacture of paper, so the paper manufacturing and converting industry is the foundation of the graphic arts industry. Paper is, in fact, much more than the raw material for the graphic arts industries; its character enters into the character of all that results from the graphic arts. There is an essential interdependence between paper and the graphic arts industries which warrants a much closer contact between these two great industries in the meeting of their common problems than has been appreciated in the past.

Tendencies in Organized Effort in American Business

We are hearing much of the new competition which faces American business and American industries. This is indicated as competition between industries rather than individuals and as intangble as this new competition is there can be no question but that it is a force which must weld together groups within closely allied industries for the meeting of common problems and for the presenting of a united front, in all of their activities, to the public and to the government.

Doubtless the paper industry is feeling this new competition as fully as the other great American industries. However, because of the nature of the industry and its newness insofar as the use of wood for the production of pulp and paper is concerned, it is becoming very evident to the industry that its chief competition is not so much with other commodities or with foreign paper as with capital. This, however, brings up a question which has to do with the future of the paper industry rather than with the advantages to be derived from united effort in solving common problems of an allied industry.

With the growing recognition of intercommunity and interindustry relationships and obligations there has been a decided trend in this country in the past few years toward a grouping together in federated form of commercial and trade groups and organizations. As examples of this tendency toward federated or unified effort are the surprising growth and increasing service of such organizations as the Chamber of Commerce of the United States, the National Industrial Conference Board, the National Association of Manufacturers, and similar organizations. In trade association work the same tendency is in evidence and has resulted in such organizations as the Music Industries Chamber of Commerce, the Automobile Chamber of Commerce of the United States, the Cotton Institute of America, the American Paper and Pulp Association and others.

An Example of Federated Activity

The evolution of the association from a very simple form, which resulted from a gathering of paper makers, as they were then called, in Saratoga Springs in 1878, to the present form of a central or parent association, with which there is now affiliated 16 different associations, is an interesting story of trade association development in this country. There was at least one organization of a separate group in the paper industry, that is the Writing Paper Manufacturers Association, before American Paper and Pulp was organized 50 years ago. However, the central organization was created to give the opportunity for the coming together of representatives of all groups and as a means of uniting to meet what then appeared as problems common to the entire industry and which today are more apparent as common problems.

Today the Association is focusing its efforts upon problems which are common to all of the various groups of the industry and to all of the mills and the plants of the industry—such, for example, as:

Representing the industry in its contact with government, whether federal or state, and before the public. To achieve standing and recognition as a part of the industrial life of the country, industries are appreciating today as never before the necessity for an organization which stands for the industry in all of its developments and needs.

Presenting a united front in matters affecting the welfare of the entire industry, such as legislation, tariff, taxation, traffic, perpetuation and conservation of raw materials, etc. Industry is learning that the government turns a poor ear to separate groups or individuals when they speak in Washington, as compared with the hearing given when the industry as a whole voices its needs. Only through the central organization, representing the entire industry, can the industry show its strength when it must speak in its defense or in its demand for fair treatment and recognition.

Fortifying the Industry With Raw Materials

Every industry in America dependent for raw materials upon natural resources is forced to recognize the need for aggressive effort that will result in the conservation of these resources and, thus, the fortifying of the industry with a permanent supply of raw materials.

Statistical Service

Statistics as to the activities of the industry in the way of production, stocks on hand, etc., are not as a rule sufficiently standardized to make it possible for a number of groups within an industry to get out statistical reports of the character that insures proper balancing and coordination and that will tell the right story as to the entire industry. The Association, through a statistical service in charge of a trained statistician, with the assistance of its affiliated groups, is rapidly developing statistical reports which are giving a really coordinated statistical picture of the paper industry.

Unified and Coordinated Research

Because of the very character of research, individual plants in various industries must continue to spend large sums of money for research covering the individual problems of the separate plants. However, in every industry in which research is being carried on generally in individual plants there is a great deal of duplication with resultant expenditure of large sums of money which might be saved to industry. Through one of its affiliated associations, the Technical Association, the paper industry is in a position to coordinate research much more effectively than is being done at the present time. The necessity for the saving of waste in production is clearly recognized in industry today but it is not yet clearly recognized that great savings could be made by pooling, at least to a certain extent, research and investigation which is common to or necessary for the entire industry.

Vocational Training

The paper industry recognizes, though not as fully as the graphic arts industry, the necessity for providing facilities which will result in the inflowing of a steady stream of young men, trained as skilled workers, or so trained as to become executives. The paper industry has gone further than most industries in the putting out of a comprehensive series of text books but unfortunately the effort has been slowed up for some reason and full advantage is not being taken of these text books. It would appear that the paper industry has much to learn from the graphic arts industry in the matter of vocational training.

Certain groups within the paper industry are approaching the serious problem of extending the use of their products in a prac-

* Presented before the Graphic Arts Conference Board, Commodore Hotel, New York, September 15, 1927.

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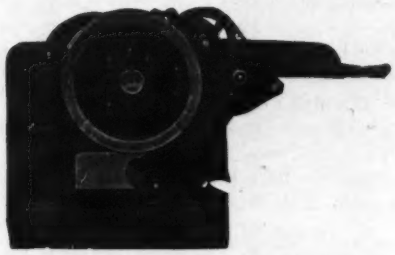

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tical and efficient way. Somehow there is still a feeling that trade extension for the entire industry is too indefinite or too big. Perhaps the paper industry has something to learn in this regard from other industries which have been forced to find new markets, new outlets for their product.

Unified Organized Effort Benefits

Before referring specifically to the advantages of unified organized effort in the graphic arts industries, it might be well to describe briefly what might be called the general advantages of unified effort.

It would be interesting and significant to know what the total overhead expense is for the 15 associations making up the Graphic Arts Conference Board and along with this to know how many plants are supporting more than one of the groups. The burden upon the business man and the manufacturer of supporting numerous organizations is becoming a heavy one. There can be no question but that the pooling of effort in meeting common problems would be a very effectual means of reducing expenses. Furthermore, the focusing of the best brains and energy of all of the groups upon the solution of common problems working through the agency of a well trained association executive should make for increased efficiency. Doubtless a number of the companies making up your various organizations own several plants, yet these companies do not have a completely organized force and staff at each plant but rather direct all of the plants from one office. So, the activities that are common to all of the groups making up this Board, could with economy and efficiency be carried on from one headquarters.

Further Advantages of Cooperation

One very distinct advantage of unified organized effort is not as fully recognized today in trade association work as it will be in the future. Individual plants and industries, as with individuals or collections of individuals in communities, are very sensitive to their standing among their peers. A strong unified organization representing an entire industry gives that industry a definite standing among the organizations representing other national industries. Furthermore, it affords a means of effective contact with other industries. If the paper industry represented by the American Paper and Pulp Association, should wish to take up some question affecting all of the 15 organizations making up the Graphic Arts Conference Board, to what organization should it apply? Certainly not to the Conference Board, as that organization does not sufficiently represent the groups which constitute it to be able to speak for those groups. Therefore, unified organized effort within an allied industry gives that industry concrete forms and standing that can be acquired in no other way.

Some of the detailed advantages and benefits which would accrue from unified organized effort among the groups making up the Graphic Arts Conference Board should be:

Economy and strength resulting from unified legislative effort. Putting the force of the entire group behind the protection and the perpetuation of the industry.

A common statistical bureau making it possible to develop statistics on a comparable and coordinated basis that tells the story of the entire industry.

A cost bureau serving all of the groups, bringing uniformity and economy. In any such group as the Graphic Arts Conference Board, should several of the groups take up cost work under different cost men, there would probably result a lack of uniformity and duplication and waste.

A Unified Legal Service

There are examples of allied industries in the country served by a number of organizations, all of which have different legal assistance. One such group is probably paying three or four times for legal assistance what would be necessary if such legal assistance as is essential for the entire group were given through one able attorney.

Research could be secured on an effective an economical basis whenever needed along engineering or technical lines—in distribution, marketing, etc.

A central clearing house of related information not only for the industry itself but as a service to the public. Each of the groups making up this Conference Board beyond question are continually receiving letters asking for information which must be answered by some other group. In the same way, letters are written by consumers to Chambers of Commerce and other organizations throughout the country which finally come second or third hand to the agency best able to answer the injuiry. There is a great deal of information which the Graphic Arts should give the public and there can be no question but that that information, properly correlated could be given out more effectively through a central organization than under the present system.

Unified Credit Bureau Activities

Perhaps the only comment necessary here is to ask why the overhead of a separate credit bureau for each of the 15 organizations making up this Board, when, if properly organized, one credit bureau could do the work?

Intangible Results of Value

A pooling of interests through unified effort means not only reduced cost of overhead and therefore a saving to each individual plant, but it makes for better understanding of one group with another, and of the entire group with government, and last but not least it means better acquaintanceship among all the members of the various groups and the elimination of barriers which often make for suspicion and jealousy and resultant harmful action.

Financing of Organized Effort in Allied Group

A central organization in this group, representing as it does plants which it is understood are overlapping each other in their activities in an increasing way, should find it comparatively easy to assess and collect dues on an equitable basis that would insure complete service to every unit, however large or small. It is assumed that taxation as a phase of government is based upon the ability of the individual or the corporation to pay. To a certain extent this same idea must be carried out in the making of assessments in the form of dues for the carrying on of organized activity in industry. The basis of assessment must be simple and easily understood and applied by individual plants. Payments must be equitable and reasonable and the method of collection must be simple and easy. Any complexity in assessment is bound to cause individuals or groups to feel that they are paying more than their share and, therefore, make for misunderstanding and lack of harmony.

Almost numberless plans for the assessment of membership dues by trade associations have been tried out in this country. Gradually many of the larger associations are coming to the idea that the only sound and reasonable plan for assessment of dues must be on the basis of annual gross sales. That is, dues to be fixed as a low percentage of the annual gross sales. This basis is in fact a sliding scale which because of larger benefits and returns calls upon the larger plants to pay a proportionately larger amount than the smaller plants. The sliding scale is very much better than a fixed amount for each firm which amount must usually be arbitrarily determined and that regardless of size of plant or business done.

Adequate Financing Is Fundamental

Either the Association should be a business organization, warranting reasonable support, or it isn't worthy of existence. Underfinancing or lack of capital is causing many associations the troubles which accrue for the same reasons to business plants.

Administrative Control

Experience in successful trade association work in this country has demonstrated the great advantage of a small governing board with reasonably independent powers. When such a board is not self-perpetuating, and it is comparatively simple to prevent such

(*Continued on page 64*)

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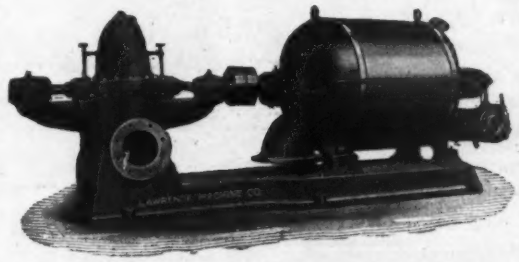

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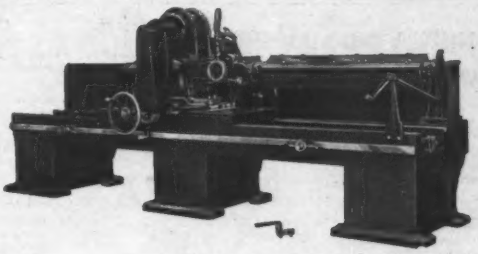

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Wall paper .....2 bls., 16 cs.
Paper hangings .....38 cs.
News print .....9,109 rolls
Printing paper .....259 cs.
Pergamyn paper .....18 cs.
Wrapping paper .....476 rolls, 177 bls., 67 cs.
Packing paper .....79 cs.
Baryta coated paper .....51 cs.
Metal coated paper .....10 cs.
Coated paper .....10 cs.
Parchment paper .....4 rolls, 22 bls., 6 cs.
Crepe paper .....8 cs.
Photo paper .....7 cs.
Cover paper .....14 cs.
Colored paper .....14 cs.
Decalcomania paper .....59 cs.
Filter paper .....40 cs.
Writing paper .....6 cs.
Filter pulp .....30 bls.
Stencil paper .....2 cs
Miscellaneous paper
2,643 rolls, 415 bdls., 301 bls., 112 cs.

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British American Tobacco Co., Suffren, Havre, 12 cs.
Standard Products Corp., Suffren, Havre, 45 cs.
Standard Products Corp., Paris, Havre, 80 cs.
P. Lorillard & Co., Bankdale, Marseilles, 50 cs.
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PAPER HANGINGS

Whiting & Patterson Co., Minnewaska, London, 33 cs.
Whiting & Patterson Co., Majestic, Southampton, 4 cs.
C. Grimmer & Son, Paris, Havre, 1 cs.

NEWS PRINT

Parsons & Whittemore, Inc., A. Ballin, Hamburg, 242 rolls.
Parsons & Whittemore, Inc., Lutzow, Bremen, 656 rolls.
National City Bank, Lutzow, Bremen, 83 rolls.
Perkins, Goodwin & Co., Lutzow, Bremen, 452 rolls.
The Times Union, Drottningholm, Gothenburg, 110 rolls.
Staats Herold, Drottningholm, Gothenburg, 20 rolls.
Hudson Trading Co., Drottningholm, Gothenburg, 206 rolls.
Walker, Goulard, Plehn Co., Stavangerfjord, Oslo, 10 rolls.
N. Y. Telegram, Cornerbrook, Cornerbrook, 3,553 rolls.
Brooklyn Times, Cornerbrook, Cornerbrook, 903 rolls.
N. Y. Post, Cornerbrook, Cornerbrook, 788 rolls.
Brooklyn News, Cornerbrook, Cornerbrook, 1,009 rolls.
Clinton Paper Corp., Cornerbrook, Cornerbrook, 802 rolls.
Bank of Montreal, Cornerbrook, Cornerbrook, 275 rolls.

PRINTING PAPER

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Goldsmith & Co., Drottningholm, Gothenburg, 177 bls.
Chemical National Bank, Drottningholm, Gothenburg, 34 rolls.
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The Borregaard Co., Inc., Drottningholm, Gothenburg, 1,322 rolls.
Arkell Safety Bag Co., Drottningholm, Gothenburg, 72 rolls.
C. K. MacAlpine & Co., Drottningholm, Gothenburg, 33 bls., 35 rolls.
Messinger Paper Co., Drottningholm, Gothenburg, 109 bls., 1,206 rolls.
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Cheramy, Inc., Paris, Havre, 1 cs.
Standard Products Corp., Paris, Havre, 40 cs.
Coenca, Morrison & Co., Paris, Havre, 9 cs.
Keller Dorian Paper Co., Paris, Havre, 24 cs.
Walker, Goulard, Plehn Co., Kolsnaren, Kotka, 1 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Montevideo, Barcelona, 278 bls. rags.
Ancram Papermills, Cameronia, Glasgow, 37 bls. paper stock.
A. W. Fenton, Inc., Pres. Roosevelt, Bremen, 19 bls. bagging.
N. E. Berzen, Schodack, Havre, 302 bls. paper stock.
A. W. Fenton, Inc., Nobles, Genoa, 147 bls. bagging.
Guaranty Trust Co., California, Havre, 36 bls. rags.
American Exchange Irving Trust Co., California, Havre, 43 bls. new cuttings.
G. M. Graves Co., Inc., Minnewaska, London, 100 bls. bagging.
Bulkley, Dunton & Co., A. Ballin, ——, 59 bls. rags.
State Bank, A. Ballin, Hamburg, 5 bls. rags.
E. Mayer, A. Ballin, Hamburg, 24 bls. rags.
Castle & Overton, Inc., Lutzow, Bremen, 44 bls. thread waste.
Jaffe Products Co., Orizaba, Havana, 9 bls. rags.
Guaranty Trust Co., Cold Harbor, Manchester, 47 bls. cotton waste.
E. Butterworth & Co., Inc., Cold Harbor, Manchester, 83 bls. paper stock.
M. Snedeker Corp., Cold Harbor, Manchester, 149 bls. paper stock.
J. Cohen Son & Co., Lepanto, Hull, 25 bls. rags.
Castle & Overton, Inc., Lepanto, Antwerp, 121 bls. bagging.
Castle & Overton, Inc., Lepanto, Antwerp, 74 bls. rags.
E. J. Keller Co., Inc., Lepanto, Antwerp, 108 bls. rags.
Bulkley, Dunton & Co., Lepanto, ——, 131 bls. bagging.
Mutnick Bros., Cedric, Liverpool, 63 bls. rags.
E. J. Keller Co., Inc., Suffren, Havre, 142 bls. rags.
Equitable Trust Co., Suffren, Havre, 53 bls. rags.
Union National Bank, Suffren, Havre, 46 bls. string waste.
Bulkley, Dunton & Co., West Arrow, ——, 91 bls. rags.
Whaling Waste Products Corp., Tigre, Antwerp, 38 bls. rags.
Equitable Trust Co., Tigre, Antwerp, 73 bls. rags.
Kidder Peabody Accep. Corp., Tigre, Antwerp, 69 bls. new cuttings.
Kidder Peabody Accep. Corp., Tigre, Antwerp, 118 bls. bagging.
Castle & Overton, Inc., Liberty, Havre, 171 bls. bagging.
Castle & Overton, Inc., African Prince, Scotland, 28 bls. paper stock.

OLD ROPE

Brown Bros. & Co., Montevideo, Coruna, 45 coils.
Brown Bros. & Co., California, Havre, 98 rolls.
W. Schall & Co., California, Havre, 67 bls.
W. Steck & Co., A. Ballin, Hamburg, 92 bls.
G. W. Millar Co., Inc., Lepanto, Hull, 89 coils.
E. J. Keller Co., Inc., Lepanto, Hull, 48 coils.
Brown Bros. & Co., Lepanto, Hull, 418 coils.
Brown Bros. & Co., Bankdale, Barcelona, 72 bls.

CHINA CLAY

J. Dixon Crucible Co., A. Ballin, Hamburg, 400 bags.

CASEIN

Atterbury Bros., Inc., Paris, Havre, 200 bags.
Champion Coated Paper Co., Boswell, Buenos Aires, 805 bags.

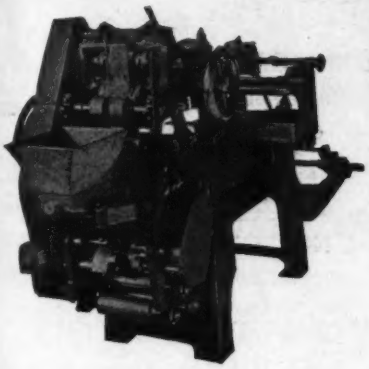
WOOD PULP

J. Anderson & Co., Naples Maru, Hamburg, 526 bls. sulphite, 105 tons.
Castle & Overton, Inc., Anaconda, Rotterdam, 580 bls. wood pulp, 90 tons.
E. M. Sergeant & Co., Drottningholm, Gothenburg, 897 bls. dry soda pulp.
Price & Pierce, Ltd., Drottningholm, Gothenburg, 800 bls. wood pulp.
F. R. Eaton, Azua, Liverpool, N. S., 9,002 bls. wood pulp, 825 tons.
W. Hughes & Co., Newton Bay, Liverpool, N. S., 523 tons wood pulp.
E. M. Sergeant & Co., Stavangerfjord, Oslo, 325 bls. wood pulp.
Chemical National Bank, Stavangerfjord, Oslo, 600 bls. wood pulp.
Atterbury Bros., Inc., Stavangerfjord, Oslo, 500 bls. wood pulp.
Buck, Kiaer & Co., Inc., Kolsnaren, Stockholm, 1,200 bls. sulphite.

WOOD FLOUR

H. J. Baker & Bros., Anaconda, Rotterdam, 400 bls., 20,000 kilos.

(*Continued on page 60*)



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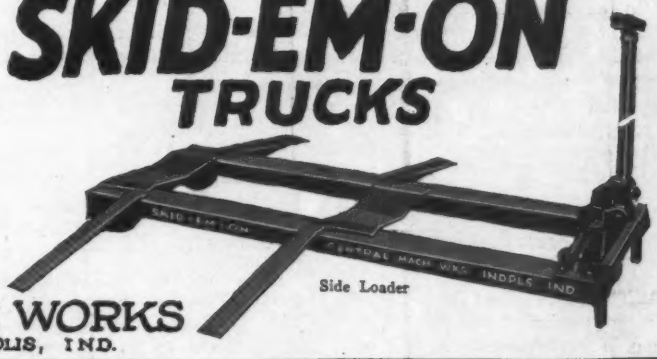

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437 S. SENATE AVE., INDIANAPOLIS, IND.

Imports of Paper and Paper Stock

(*Continued from page 58*)

F. B. Vandegrift & Co., West Arrow, Rotterdam, 400 bls., 20,300 kilos.

Equitable Trust Co., West Arrow, Rotterdam, 537 bags, 32,270 kilos.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 24, 1927

Union National Bank, London Mariner, London, 232 bls. paper stock.

A. Murphy & Co., London Mariner, London, 3 cs. writing paper.

A. H. Searle, Inc., London Mariner, London, 350 bls. rags.

J. Lang Paper Co., London Mariner, London, 381 bls. rags.

H. F. Watson & Co., London Mariner, London, 43 bls. rags.

Kaufmans, Schodack, Havre, 3 cs. writing paper.

J. L. Vandiver, Schodack, Havre, 2 cs. writing paper.

Robert Blank, Schodack, Havre, 178 bls. rags.

V. Galaup, Schodack, Havre, 394 bls. rags.

A. Hurst & Co., Schodack, Havre, 63 bls. rags.

A. Block, Schodack, Havre, 49 bls. thread waste.

J. H. Whitwell, Schodack, Havre, 1 cs. wall paper.

A. Hurst & Co., Schodack, Dunkirk, 39 bls. rags.

Castle & Overton, Inc., Schodack, France, 72 bls. rags.

Union National Bank, Nobles, Genoa, 216 bls. old rope.

E. A. Stone, Nobles, Leghorn, 78 bls. rags.

Chase National Bank, California, Havre, 376 bls. rags.

New York Trust Co., California, Havre, 294 bls. rags.

Phila. Girard National Bank, Bankdale, Marseilles, 170 bls. rags.

New York Trust Co., Bankdale, Valencia, 245 bls. rags.

Castle & Overton, Inc., West Arrow, Rotterdam, 176 bls. wood pulp, 28 tons.

Castle & Overton, Inc., Saco, Antwerp, 316 bls. rags.

Castle & Overton, Inc., Bristol City, England, 192 bls. rags.

Castle & Overton, Inc., Rexmore, Scotland, 59 bls. paper stock.

Castle & Overton, Inc., J. Skinner, Germany, 834 bls. wood pulp.

Buck, Kiaer & Co., Inc., Florida, Oslo, 400 bls. kraft pulp.

Parsons & Whittemore, Inc., Luebeck, ——, 433 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 24, 1927

Upson Walton & Co., Pres. Polk, Manila, 437 pkgs. rope.

International Purchasing Co., West Arrow, Rotterdam, 22 coils old rope.

Bulkley, Dunton & Co., West Arrow, ——, 51 bls. rags.

Bulkley, Dunton & Co., West Arrow, ——, 59 bls. new cuttings.

Castle & Overton, Inc., West Arrow, Rotterdam, 540 bls. wood pulp, 84 tons.

Green, Hamilton & Co., West Arrow, Rotterdam, 100 bls. thread waste.

S. S. Pierce & Co., West Arrow, Rotterdam, 7 cs. paper.

1st National Bank of Boston, Boswell, Buenos Aires, 167 bags casein.

Parsons & Whittemore, Inc., Hjelmaren, ——, 780 bls. wood pulp.

Parsons & Whittemore, Inc., West Campgaw, ——, 835 bls. wood pulp.

Robert Blank, West Campgaw, Hamburg, 52 bls. rags.

CHARLESTON IMPORTS

WEEK ENDING SEPTEMBER 24, 1927

E. J. Keller Co., Inc., Californian, ——, 200 bls. bagging.

NEW ORLEANS IMPORTS

WEEK ENDING SEPTEMBER 24, 1927

Castle & Overton, Inc., Missouri, France, 518 bls. rags.

Castle & Overton, Inc., Niagara, France, 168 bls. rags.

Castle & Overton, Inc., Winston-Salem, France, 282 bls. rags.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 24, 1927

Robert Blank, Nobles, Leghorn, 186 bls. rags.

Bulkley, Dunton & Co., Anaconda, ——, 750 bls. wood pulp.

National City Bank, California, Havre, 728 bls. rags.

Baltimore Trust Co., California, Havre, 76 bls. rags.

Baltimore Star, Cornerbrook, Cornerbrook, 199 rolls news print.

Baltimore Post, Cornerbrook, Cornerbrook, 3,289 rolls news print.

Washington News, Cornerbrook, Cornerbrook, 199 rolls news print.

Buck, Kiaer & Co., Inc., Florida, Oslo, 800 bls. kraft pulp.

Parsons & Whittemore, Inc., Luebeck, ——, 1,381 bls. wood pulp.

NORFOLK IMPORTS

WEEK ENDING SEPTEMBER 24, 1927

National City Bank, Anaconda, Rotterdam, 337 bls. bagging.

Newfoundland Leads the Way in Wood Embargo

ANNAPOLIS ROYAL, N. S., September 19, 1927.

Editor PAPER TRADE JOURNAL:

It has remained for Newfoundland to take the lead in introducing legislation prohibiting the export of wood cut on privately owned lands, through an amendment to the Crown Lands Act, just introduced in the House of Assembly, which reads as follows:

"Section 43. Notwithstanding anything in any Act contained, no holder of a timber or pulp license or of lands held in fee simple or under lease or demise from the Crown shall, (save under and to the quantity provided by any special Act expressly permitting him so to do) take or carry away for exportation from any lands so licensed or held, any trees, logs or timber unless and until the same have been manufactured into paper, paper pulp, sawn lumber or other saleable products of timber, under a penalty of not less than twenty dollars for every tree cut, to be recovered by suit in the name of the Minister of Agriculture and Mines; and trees or timber cut into cordwood, pulpwood, pit-props or other lengths and whether barked or not shall be held not to be saleable products for the purposes of this Section."

Congratulations to Newfoundland and her loyal, courageous and honest representatives, who have set an example for Canada that cannot be ignored.

FRANK J. D. BARNJUM.

Transportation for Paper Mill Workers

GREENWICH, N. Y., September 24, 1927.—Howard B. Thompson, of North Hoosick, head of the Stevens & Thompson Paper Company, is the principal stockholder of the Ondawa Transportation Company, Inc., chartered during the week with the Secretary of State. Edward T. Jones, manager of the Middle Falls mill of the Stevens & Thompson Paper Company, and John W. Bright are directors, each owning five shares. The company is authorized to issue one hundred shares of stock having no par value. Mr. Thompson owns ninety shares.

The company plans to operate a bus line between Thompson and Greenwich to provide transportation for paper mill employees living in Greenwich and Thompson and employed in mills at Middle Falls, Phoenix and other places along the line formerly served by a branch line of the Hudson Valley Railway.

Farnum Takes Charge of West End Mill

[FROM OUR REGULAR CORRESPONDENT]

CARTHAGE, N. Y., September 24, 1927—Walter Farnum has become associated as superintendent with the West End Paper Company and has assumed charge of the local mill. Mr. Farnum has had a wide experience in the paper industry, having been connected in an executive capacity with various paper mills in Maine and Vermont. He succeeds Francis Johnson, who recently resigned as superintendent of the West End Company, after several years in the position. Mr. Johnston has become superintendent of the Sherman Paper Company, Felts Mills.

New Warehouse Is Secured

The C. V. Syrett Paper Company, Ltd., who over a year ago bought out the Wilkinson Paper Company, 63-71 Wellington street West, Toronto, has taken a long lease of the southwest corner of Church and Front streets, from the Boulton Estate, owners of the property. The old building, which has good light and shipping facilities and is built on a lot 60 by 100 feet, was known for years as the Sloan warehouse. Sloan & Co., wholesale grocers, occupied the building and later it was tenanted by the York Trading Company. The new lessees will move in about October 15.

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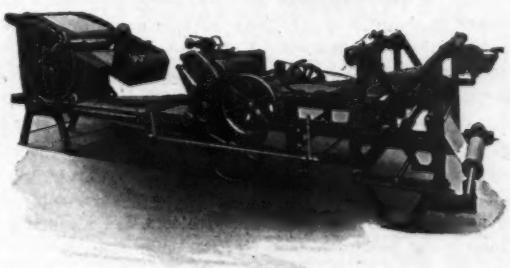

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New York Market Review

Office of THE PAPER TRADE JOURNAL,
Wednesday, September 28, 1927.

Trading in the local paper market was fairly active during the past week. The various grades of paper were in steady request and prices were generally well maintained at recently quoted levels. A satisfactory volume of inquiries is reported to be in the market on account of future requirements and the trade is generally optimistic over the outlook. Sales forces of the leading paper houses are in the midst of a strenuous fall campaign which promises to prove highly successful.

Demand for news print continues to expand and many publishers are replenishing their stocks at the present time. Spot supplies are about sufficient to take care of the current needs. Contract orders are moving into consumption at an excellent pace. Quotations are steady and unchanged and the market is in a better position than for some time past.

The condition of the paper board market is sound and the recently advanced prices are holding up well, in most instances. Fine papers are also in better request. Tissue business is improving steadily. Consumption of coarse papers is expanding and the wrapping paper situation is gradually clearing up.

Mechanical Pulp

Most of the business transacted in the ground wood market during the past week was along routine lines. Offerings of spot supplies are ample. The number of inquiries being received is fairly satisfactory and a more lively market is generally anticipated in the near future. Prices are practically unchanged.

Chemical Pulp

Both imported and domestic chemical pulp are beginning to attract more interest from the paper mills. It is reported that many of the leading manufacturers are purchasing steadily at present for next year's requirements. Quotations are unchanged and there is little talk around of concessions in the immediate future, at least.

Old Rope and Bagging

There is a somewhat better feeling in the old rope market and the demand for both foreign and domestic grades is steadily improving. Prices are generally steady to firm. The consuming inquiry for bagging is gradually broadening and more business is being consummated. Prices remain unaltered, in most instances.

Rags

With many of the paper mills running closer to capacity, the request for both foreign and domestic rags is beginning to improve. Prices are generally holding up to the levels recently prevailing and should the demand expand to any great extent, a stiffening of quotations is bound to result.

Waste Paper

The paper stock market is experiencing a good buying movement at present and prices are very firm. Hard white shavings are in particularly good request. Advances have been recorded on both Hard White No. 1 and Hard White No. 2. Soft white shavings are also firmer. The tone of the book stock market has considerably improved and higher prices are being asked for most of the various grades.

Twine

Now that the demand for wrapping paper is increasing, the twine market is exhibiting a stronger undertone. Due to the higher price of cotton, quotations on cotton twines are much higher than for some considerable time. No. 1 grade is now quoted at from .39 to .40. No. 2 is selling at from .37 to .38, while No. 3 is offered at from .36 to .37.

Boston Paper Trade Happenings

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., September 26, 1927.—Frank Floyd, of the Crescent Paper Company, Indianapolis, Ind., member of the survey committee of the National Paper Trade Association of the United States, was the guest of honor at a luncheon Tuesday, September 20, held by the New England Paper Merchants Association at the Boston Chamber of Commerce. Mr. Floyd gave a talk on the net profit control as applied to his own business. M. O. Byrne, of Whitney Bros., Inc., a vice-president of the New England Paper Trade Association, presided. About thirty were present.

Lewis Jennings, of New York City, treasurer of E. Butterworth & Company, Inc., was at the Boston office of that company for a day last week.

J. F. Blackman, manager of the twine department of the D. F. Munroe Company, is passing his vacation at Craigville and Cape Cod.

C. O. Brown, of the Kerr Paper Mills, Downingtown, Pa., called on the trade last week.

Tileston & Hollingsworth are preparing their 1928 calendar. They are receiving requestes from various organizations to hold a calendar night with them.

The recent series of four color process ship pictures entitled "For Those Who Love the Sea" and produced by Louis Dejonge & Co., met with such tremendous enthusiasm among all branches of graphic arts that it is now out of print. Agents generally are deluged with calls for these pictures, but no more copies are obtainable. They are being displayed here by the Arnold Roberts Company. Louis Dejonge & Co., converters, are developing a new machine which rules and prints at the same time.

Percy D. Wells is showing a very best line of Causon et Montgolfier's French hand-made and all rag deckle hand made cards and announcements.

Carl Maglathin, formerly sales manager for W. C. Hamilton & Son, Philadelphia, has taken a similar position with the Reading Paper Mill. Mr. Maglathin has also been with other concerns, including the American Writing Paper Company. He has made a specialty of developing distinctive papers of high character. Mr. Maglathin has formerly lived in this vicinity, has travelled extensively in New England, and is well known in the Boston trade.

Louis E. Vose, vice-president of Hollingsworth & Vose, has returned with his family from a trip abroad.

The Deerfield Glassine Company is about to start operations in the manufacture of high-grade glassine papers at Monroe Bridge, Mass. The sales office of the new concern is at 5 Beekman street, New York.

Clay

300 tons daily

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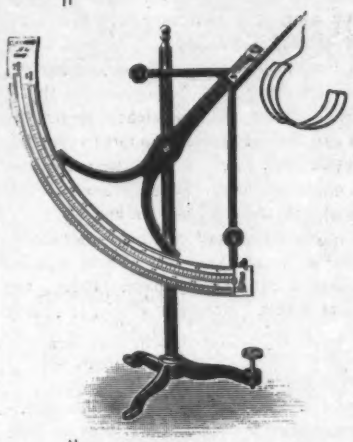

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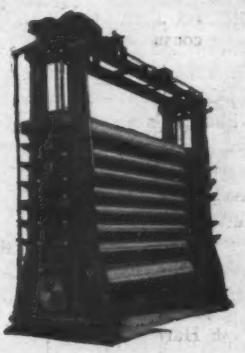


Miscellaneous Markets

Office of THE PAPER TRADE JOURNAL,
Wednesday, September 28, 1927.

Most of the business transacted in the local chemical market during the past week was along routine lines. Inquiries are being received by the manufacturers in excellent volume and the future outlook is promising. Contract withdrawals are being maintained in a satisfactory manner. Prices are holding up to schedule and shading is infrequent.

BLANC FIXE.—The blanc fixe market is in a sound position and both the pulp and the powder are in excellent request. Shipments against contract are moving at a normal rate. Prices remain unaltered. The pulp is selling at $60 per ton, in bulk. The powder is quoted at from 4 cents to 4¼ cents a pound, in barrels, at works.

BLEACHING POWDER.—Consumption of bleaching powder is being maintained in good volume. Shipments against standing contracts are moving at a good rate. Prices are steady to firm. Bleaching powder is still quoted at from $2 to $2.40 per 100 pounds, in large drums, at works, according to quantity.

CASEIN.—No radical changes have transpired in the casein market. Demand for this product is fairly persistent and supplies are moving into consumption at a satisfactory pace. Prices are holding up to previously quoted levels. Domestic casein is selling at from 17 cents to 18¼ cents a pound. Imported casein is offered at from 18 cents to 18¼ cents a pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda continues excellent. Production is being maintained in sufficient volume to take care of current requirements. Prices remain unaltered. Solid caustic soda is quoted at from $3 to $3.10 per 100 pounds. The flake and the ground is offered at from $3.40 to $3.50 per 100 pounds, in large drums, at works.

CHINA CLAY.—Steadiness prevails in the china clay market. Contract withdrawals are moving in a satisfactory manner. Prices are practically unchanged. English china clay is still selling at from $15 to $25 a ton, ship side. Domestic paper makers' clay is quoted at from $8 to $9 a ton, in bulk, at mine, and pulverized at from $10 to $12 a ton.

CHLORINE.—Conditions in the chlorine market are normal for the time of the year. Contract shipments are proceeding at a steady rate. Prices are holding up to schedule without difficulty. Chlorine is selling at 4 cents a pound, in tanks, or multi-unit cars, at works, on contract orders. The spot quotation ranges from 4¼ cents to 4½ cents a pound.

ROSIN.—The rosin market was fairly active during the past week. Prices are generally steady and unchanged from previously quoted levels. At the naval stores, the grades of gum rosin used in the paper mills are still selling at from $10.10 to $10.15 per 280 pounds gross, in barrels, ex dock. Wood rosin is quoted at $9.50 per 280 pounds, southern shipping points.

SALT CAKE.—Some improvement was noticed in the salt cake market and quotations are generally being well maintained. Supplies are moving into consumption in good volume. Salt cake is still quoted at from $18 to $19 a ton, in bulk, at works. Chrome salt cake is offered at from $14 to $15 a ton, in bulk, at works.

SODA ASH.—Manufacturers of soda ash report that contract withdrawals are increasing steadily. A good volume of inquiries are in the market for future business and the undertone of the market is sound. Contract quotations on soda ash, in car lots, at works, are as follows: in bulk, $1.20; in bags, $1.32½, and in barrels, $1.57½.

STARCH.—Business in the starch market during the past week was fairly satisfactory. Large shipments have been made by the refiners of late. Prices continue steady to firm and there is little talk of concessions around. Special paper makers' starch is still selling at $3.07 per 100 pounds, in bags, and at $3.24 per 100 pounds, in bags, at works.

SULPHATE OF ALUMINA.—Large quantities of sulphate of alumina are going forward and consumption is being maintained in excellent volume. Prices remain steady and unchanged. Commercial grades of sulphate of alumina are quoted at from $1.40 to $1.45 per 100 pounds. The iron free is selling at from $2 to $2.05 per 100 pounds, in bags, at works.

SULPHUR.—The sulphur market is exhibiting a strong tendency. Contract shipments are moving into consumption in a satisfactory manner. Prices are holding up to the levels which have prevailed for some considerable time past. Sulphur is quoted at from $18 to $19 a ton, in bulk, at mine, according to quantity. The spot quotation remains unaltered at $20 per ton.

TALC.—Somewhat quieter conditions prevailed in the talc market during the past week. The industry, however, is in a sound position and trading should expand from now on. Quotations on domestic talc range from $16 to $18 a ton, at eastern mills. French talc is still selling at from $18 to $22 a ton, ship side.

SOME COMMON PROBLEMS

(*Continued from page 56*)

harmful practice, a small governing board with reasonably wide latitude in action will always be sensitive to the wishes of the organization and can always be changed if not functioning effectively. Membership on the board can easily be rotated so as to provide for continuity of policy. Where an allied industry is made up of a number of groups it is sometimes helpful to have what might be called both an executive and a legislative body. That is, an advisory body might be developed where each group could have representation to assist the executive body in development of policies and to assist in the carrying out of work to be accomplished for widely scattered groups or individual plants.

The attorney for the organization should be an advisory and not an executive. The manager or executive secretary should be a thoroughly well-trained man of experience and standing to whom should be given real executive powers under the direction, of course, of the governing body of the organization. Numerous failures in trade association work in this country have resulted from the hiring of a secretary rather than an executive. Fortunately the trade association executives of the country are developing a profession and providing for the training of men to gradually come into this exceedingly important phase of our modern industrial life.

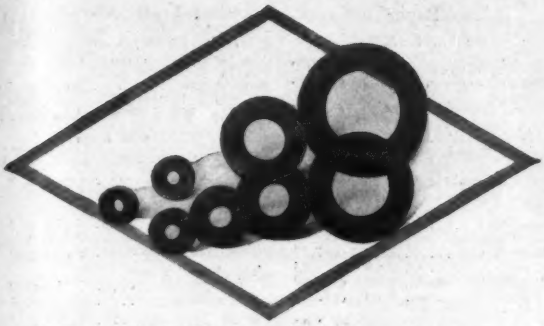
A central organization which would mean unified effort in solving the common problems of an allied industry, if and when developed, should be recognized as an organization of business men functioning as a business organization and dealing with the vital problems of the industry, the solution of which would mean dollars and cents to every individual plant. The investment in such an organization by the groups and by individual plants is in fact an investment in industrial insurance and more an investment in activities that would bring harmony and better business to the industry. The organization should and must be of such a character that every group and every individual can, with pride, back it as he would his own individual business.

Oregon Paper Trade Happenings

PORTLAND, Ore., September 24, 1927.—The Portland Envelope Company, a newly organized concern in Portland, Ore., is now moving paper stock, machinery and press equipment into the plant at 449 East Morrison street, and according to Manager A. A. McFarland, will have operation under way early in October.

H. S. Fuller, who represents the Harnischfegar Company in the northwest, reports that his firm is installing a P. & H. Monorail System in the Hawley Pulp and Paper plant at Oregon City. This same system is being installed also in the new mill of the Zellerbach Company at Hoquiam, and in the plant which the National Paper Products Company is building at Port Townsend.

A. B. Martin, vice-president of the Crown-Willamette Paper Company, made a recent trip to Portland from San Francisco.



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It is not through force of habit that engineers by the hundred standardize on Jenkins Discs as well as Jenkins Valves. It is because performance speaks for itself—because experience points out the best combination, a disc and a valve made by the original makers of the first disc valve.

Jenkins Renewable Discs of resilient rubber composition are made with the benefit of over half a century's experience in the compounding of leak-stopping materials. They are furnished in a number of compositions to suit different requirements, while for certain services, discs of white metal, steam metal and monel metal are supplied.

Send for a folder descriptive of Jenkins Discs.

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JENKINS BROS., Limited
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Always marked with the "Diamond"
Jenkins Valves
SINCE 1864

SAVEALLS · AMERICAN CONTINUOUS FILTER · DECKERS
THICKENERS · UNITED FILTERS CORP. HAZLETON, PA. · BLEACH WASHERS

ERIE CITY 3-drum BOILER
ERIE CITY IRON WORKS
Erie, Penna.

The
ST. REGIS PAPER COMPANY

Daily Capacity 525 TONS

Newsprint
Catalog and Directory Papers
Fibre Wrapping Papers
Packers Oiled Manila
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General Sales Office
49 Wall St., New York

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Dayton Globe Lever Dump Valve
for Beaters

1 Replaces old fashioned flat dump valve
2 Fits any make or size beater—right or left hand
3 Positive in action—lid cannot blow open
4 Very handy and fast—just pull the lever

Can be installed at a reasonable cost in any make beater. Write now for price and details.

DAYTON GLOBE IRON WORKS **DAYTON, OHIO**

Market Quotations

Quoted by Hepburn & Co., 74 Broadway, N. Y. City, to whom all inquiry for quotations on these or any other Securities is referred.

BONDS	BID	OFFERED
Advance Bag & Paper, 7s 1943	105	107
A. P. W. Pulp & Power, 7s 1945	101	102
American Writing Paper, 6s 1947	79	82
Bastrap Pulp & Paper, 6½s 1940	100	103
British Columbia Pulp & Paper, 6s 1950	85	90*
Beaver Products Corp., 7½s 1942	106	109
Berkshire Hills Paper, 8s 1941	60	80
Brown Paper Co., 1st 5½s 1946	94	98
Bryant Paper Co., 6s 1942	100½	102
Cape Breton Pulp & Paper, 6s 1932	101	103
Central Paper Serial 6, 6½s 1942	89	...
Champion Coated Paper, 6s 1926 to 1932	99	...
Champion Fibre, 8s 1930	100	...
Champion Paper Corp'n, 1st 6s 1945	95	97
Continental Paper Products, 6½s 1943	88	91½
Corneil Wood Prod., 7½s 1937	100	104*
Crown Willamette Paper, 6s 1951	97	101
Donnaconna Paper, 6s 1940	101	102½
Dells Paper & Pulp Serial, 6s 1926-38	*95	...
Eastern Mfg. Co., 7s 1938	89	91
Eddy Paper, 7½s 1931	102	104
Escanaba Paper Serial, 6s 1926-39	94	96
Filer Fibre Serial, 7s 1926-39	95	...
Fort Orange Paper, 7s 1942	95	100*
Fox River Paper, 7s 1931	99	...
Gair Co. (The Robt.), 7s 1937	104	106
Gilbert Paper Co., 6½s 1926-29	89	...
Hammermill Paper, 6s 1939	100	103*
Hoberg Paper & Fibre, 7s 1937	94½	96
Itaska Paper & Prairie River Power, J+5½s 1926-38	94	96*
Itaska Paper, 1st 6s 1933-38	96	98*
Kalamazoo Veg. Parchment, 6s 1938	98	...
Marinette & Menominee, 7½s 1936	103½	105
Menasha Printing & Carton, 6½s 1939	99½	...
Mengel Company, 7s 1926 to 1934	103	...
Monroe Paper Products, 7½s 1932	96	...
Munising Paper, 6s 1927-36	96	100
Nekoosa Edwards, 1st Ref. 6s 1928 to 1942	96	99*
Orono Pulp & Paper, 6s 1943	98	...
Orono Pulp & Paper, 5s 1941	94	...
Oswego Falls Corp., 6s 1941	98	100*
Oxford Paper, 6s 1947	104	...
Paepcke Paper Mills, 7s 1930	99	None
Parsons Pulp & Lumber, 7s 1928	97	...
Parker Young Co., 6½s 1944	96½	98½
Paterson Parchment Paper, 6s 1938	100½	102
Penobscot Chemical Fibre, 6s 1942	98	...
Poland Paper, 7s 1930	98	...
Port Alfred Pulp, 6½s 1943	*96	...
Queens City Paper, 7s 1932	95	100*
Richardson Co., 6s 1938	100	...
Spanish River Pulp & Paper, 8s 1941	106	110
Stevens & Thompson Paper, 6s 1942	93	95
St. Anne Paper, 6½s 1946	95½	98*
St. Croix Paper, 5s 1926-37	95	98*
St. Regis Paper Serial, 6½s 1926-35	98¾	...
Tait Paper & Color Industries, 6s 1934	90	95
Taggart Bros. Co., 6s 1944	94	97
Ticonderoga Pulp & Paper, 5s 1930	95	98
Ticonderoga Pulp & Paper, 6s 1940	99	101
Warren (The S. D.) Company, 6s 1945	99	101
Wotab Paper, 6½s 1943	102	...
Westfield River Paper, 7s 1926-43	Wanted	...
Whitaker Paper, 7s 1942	106	108
Witmer-Parsons Pulp & Lbr. (Units)	63	70

STOCKS	BID	ASKED
Advance Bag & Paper, 8% Pfd.	100	None
Am. Tissue Mills, 7% Pfd.	95	100
British Columbia P. & P., Pfd.	65	70
Brompton Pulp & Paper, 8% Pfd.	93	98*
Brown Corpn., 7% Pfd.	97	100*
Champion Fibre, 7% Pfd.	105	...
Diem & Wing, 7% Cum. Pfd.	87	...
Donnaconna Paper, Com.	58	...
Donnaconna Paper, Pfd.	99	None
Eastern Mfg. Co., 1st Pfd.	34	37
Great Northern Paper, Com.	72	75
Hammermill Paper, 7% Pfd.	105	110
Hinde & Dauch, Com.	135	...
Hinde & Dauch, Pfd.	100	...
Holyoke Card & Paper	150	None
Marathon Paper Mills, Com.	125	...
Midwest Box Co., Pfd. 8%	80	85
Midwest Box Co., Pfd. 6%	55	65
Louis De Jongé Co., 7% Pfd.	93	96
Oxford Papers, Com.	170	...
Oxford Paper Co., Pfd.	175	...
Penobscot Chemical Fibre, Com.	65	75*
Richardson Co., 7% Pfd.	104	...
Rubberoid Company	68	72
Seaman Container, Class B (par $1)	1	None Off.
Seaman Paper Co.	Wanted	None Off.
St. Croix Paper	150	170
St. Regis Paper Co., 7% Cum. Pfd.	101½	104½
Westfield River Paper Co., 1st Pfd.	Wanted	None Off.
West Virginia Pulp and Paper, Com.	52	57
West Virginia Pulp and Paper, Pfd.	101	103
Whittaker Paper, 7% Cum. Pfd.	97	103

* Nominal.

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine Sized	8.00	@11.00
News—		
Rolls, contract	3.25	@ —
Rolls, transient	3.25	@ 3.50
Sheets	3.65	@ 3.85
Side Runs	3.00	@ 3.75
Book, Cased—		
S. & S. C.	6.35	@ 7.75
M. F.	6.25	@ 7.75
Coated and Enamel	8.00	@15.00
Lithograph	8.00	@15.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.10	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .85
Kraft	.90	@ 1.00
Manila	.75	@ .85
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	5.25	@ 5.50
Southern	4.75	@ 5.25
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

Boards—per ton—		
News	50.00	@52.50
Straw	53.50	@57.50
Chip	47.50	@50.00
Binders' Boards	70.00	@75.00
Sgl. Mla. Ll. Chip	57.50	@60.00
Wood Pulp	80.00	@85.00
Container	67.50	@72.50

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	28.00	@30.00
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	27.00	@30.00
Screenings	15.00	@20.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.50	@ 4.50
Easy Bleaching	2.85	@ 3.10
No. 1 strong unbleached	2.50	@ 2.75
Mitscherlich unbleached	2.65	@ 3.40
No. 2 strong unbleached	2.40	@ 2.55
No. 1 Kraft	2.65	@ 2.90
No. 2 Kraft	2.50	@ 2.60
Sulphate—		
Bleached	3.75	@ 4.00

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.40	@ 4.75
Easy Bleaching Sulphite	2.85	@ 3.05
News Sulphite	2.50	@ 2.70
Mitscherlich	3.25	@ 3.70
Kraft (Domestic)	2.70	@ 3.40
Soda Bleached	3.25	@ 3.50
Sulphate Screenings—		
Coarse	.75	@ .85
Refined	1.50	@ 1.85

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	11.50	@12.00
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7.25	@ 7.75
New Unbleached	10.25	@10.75
Washables	4.25	@ 4.75
Fancy	5.50	@ 6.00
Blue Overall	6.75	@ 7.25
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Mixed Khaki Cuttings	4.50	@ 5.25
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.00	@ 5.50
Men's Corduroy	3.75	@ 4.25
New Mixed Blacks	3.50	@ 3.75

Old Rags

White, No. 1—		
Repacked	5.75	@ 6.50
Miscellaneous	4.75	@ 5.25
White, No. 2—		
Repacked	3.25	@ 3.75
Miscellaneous	2.75	@ 3.00
St. Soiled, White	2.50	@ 2.75
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.60	@ 1.70
No. 1	1.60	@ 1.70
No. 2	1.35	@ 1.45
No. 3	1.25	@ 1.35
No. 4	1.25	@ 1.35
No. 5A	.95	@ 1.05

Foreign Rags

New Light Silesias	7.00	@ 7.50
Light Flannelettes	7.75	@ 8.50
Unbleached Cottons	10.00	@11.00
New White Cuttings	10.50	@11.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50
New Mixed Cuttings	3.00	@ 3.50
New Dark Cuttings	2.75	@ 3.25
No. 1 White Linens	7.00	@ 7.75
No. 2 White Linens	5.25	@ 6.00
No. 3 White Linens	4.00	@ 4.50
No. 4 White Linens	3.00	@ 3.50
Old Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	1.90	@ 2.10
Dutch Blue Cottons	2.25	@ 2.50
German Blue Linens	2.50	@ 2.75
German Blue Cottons	2.00	@ 2.25
Checks and Blues	1.75	@ 2.00
Lindsay Garments	1.70	@ 1.75
Dark Cottons	1.55	@ 1.60
Shoppery	1.50	@ 1.55
French Blues	2.25	@ 2.50

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.80	@ 1.90
Domestic	1.80	@ 1.90
Wool Tares, light	1.60	@ 1.70
Wool Tares, heavy	1.60	@ 1.70
Bright Bagging	1.60	@ 1.70
Small Mixed Rope	1.50	@ 1.65
Manila Rope—		
Foreign	3.25	@ 3.50
Domestic	4.25	@ 4.25
New Burlap Cut	3.00	@ 3.25
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, White, No. 1	3.40	@ 3.65
Hard, White, No. 2	2.90	@ 3.05
Soft, White, No. 1	2.90	@ 3.10
Flat Stock—		
Stitchless	1.30	@ 1.35
Overissue Mag.	1.30	@ 1.35
Solid Flat Book	1.25	@ 1.30
Crumpled No. 1	.90	@ 1.00
Solid Book Ledger	1.90	@ 2.10
Ledger Stock	1.60	@ 1.70
New B. B. Chips	.65	@ .75
Manilas—		
New Env. Cut	2.40	@ 2.60
New Cuttings	1.60	@ 1.85
Extra No. 1 old	1.25	@ 1.35
Print	.85	@ .95
Container	.75	@ .85
Bogus Wrapper	.75	@ .85
Old Kraft Machine Compressed bales	2.10	@ 2.20
News—		
No. 1 White News	1.75	@ 1.80
Strictly Overissue	.85	@ .90
Strictly Folded	.70	@ .75
No. 1 Mixed Paper	.65	@ .70
Common paper	.35	@ .45

THE PULP BUYER

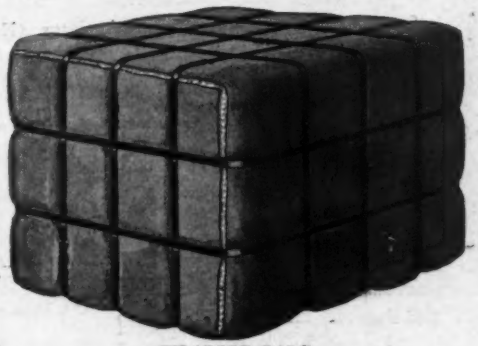
WILL TELL YOU WHY

Fidalgo System Dried and Shredded Pulp (Air Dried)

IS THE ANSWER

Units 10 to 75 ton daily capacity
Producing a compact air dry bale (suitable rail and water shipment 40-45 cu. ft. per ton) of *shredded* pulp.
Higher test than when dried on cylinder machines.

33 1/3 SAVING AT BEATER



WRAPPED BALE

GENERAL ADVANTAGES

No Mechanical Pressure used until dry—upon cutting straps at Beater entire bale allowed to absorb rapidly. No surface pressure on wet pulp during drying process. Only current of warm dehydrated air, produces a product that has its surface pores wide open for ready absorption in Beater and produces a pulp testing from 10 to 30 points higher than any pulp dried in sheet form.

LABOR, STEAM, POWER, ETC.

LESS LABOR than any cylinder or mechanical pressure dryer.
Less than 3,500 lbs. steam required (either live or exhaust) per ton air dried pulp, with economizer pulp can be dried with waste stack gases.

CLEANLINESS

Pulp being dried in closed insulated compartment—FIDALGO SYSTEM produces cleaner pulp.

USERS

Eight installations in United States and ten on order or under construction.
Your inspection invited.

COST

Less than any Drying Method we know of to install.

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Maintains your high standards -yet reduces your costs

ALPHA FIBRE

for the making of fine paper

Alpha takes the place of many grades of rags in paper making. It is clean, more economical and can be used without sacrifice of quality.

Also, papers hitherto made without rag stock, can be brought to the high quality goal, by adding Alpha to the furnish in suitable proportions.

WRITE FOR PARTICULARS

BROWN COMPANY
founded 1852
PORTLAND, MAINE

WE WILL BUY

Abitibi Fibre Co. 6s, 1947	@ 96¾
Brompton Pulp & Paper Co. 6s, 1942	@ 99⅞
Central Paper Company 7s, 1933	@ 86
International Paper Co. 6s, 1955	@104
International Pulp Co. Preferred	@ 60
Kalamazoo Vegetable Parchment 6s, 1938	@ 99¼
Missisquoi Pulp & Paper Co. 7s, 1929	@ 95¾
River Raisin Paper Co. 6s, 1936	@ 98
Sauquoit Paper Co. 6½s, 1938	@ ow
Whitaker Paper Co. 7s, 1942	@107

WE WILL SELL

Abitibi Fibre Co. 6s, 1947	@ 99
Abitibi Power & Paper Co. 6s	@102
Beaver Board Company 8s, 1933	@ 98
Chillicothe Paper Co. Preferred	@ bw
Donnacona Paper Co. 6s, 1940	@102¼
Donnacona Paper Co. Common	@ 75
Great Northern Paper Company	@ 86
Marinette & Menominee Paper 7½s, 1936	@104½
Tait Paper & Color Industries 6s, 1934	@ 92

H. D. KNOX & CO.

44 Broad St., N. Y. **27 State St., Boston**

Inquiries invited on all Paper Pulp Lumber Securities

Twines

(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.21	@	.23
No. 2	.20	@	.22
Tube Rope—			
4-ply and larger	.18	@	.19
Fine Tube Yarn—			
5-ply and larger	.23	@	.27
4-ply	.24	@	.28
3-ply	.26	@	.30
Unfinished India—			
Basis	.16	@	.17
Paper Makers Twine			
Balls	.13	@	.15
Box Twine, 2-3 ply	.17	@	.19
Jute Rope	.21	@	.23
Ameri. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.18	@	.20
No. 2 Basis	.16	@	.18
Sisal Lath Yarn—			
No. 1	.16	@	.18
No. 2	.14	@	.16
Manila Rope	.24	@	.26

CHICAGO

All Rag Bond	.35	@	.41
No. 1 Rag Bond	.25	@	.35
No. 2 Rag Bond	.14	@	.25
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¾	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
News—Roll, mill	.03½	@	.04¼
News—Sheets, mill	.03¾	@	.04¾
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.05¾	@	.06¼
Southern Kraft	.04½	@	.05
No. 2 Kraft	.05	@	.05¼
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¾
White Tissue—			
20x30 Sheet	.07¼	@	.07½
Boards, per ton— (Delivered Central Territory)			
Plain Chip	45.00	@	47.50
Solid News	47.50	@	—
Manila Line Chip	55.00	@	57.50
Container Lined— (Delivered Central Territory)			
85 Test	65.00	@	70.00
100 Test	70.00	@	75.00

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.07	@	.40
Ledgers	.11	@	.40
Writings—			
Superfine	.13	@	.18
Extra fine	—	@	.22
Fine	.20	@	.26½
Fine, No. 2	.16	@	.25
Fine, No. 3	.12	@	.20
Book, M. F.	.06¾	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.11	@	.16
Coated Lithograph	.09	@	.12
Label	.09	@	.12
News	.03¾	@	.04
No. 1 Jute Manila	.09½	@	—
Manila Sul., No. 1	.04½	@	.06
Manila, No. 2	.04	@	.04½
No. 2 Kraft	.05	@	.05¼
No. 1 Kraft	.06	@	.06¼
Common Bogus	.02¾	@	—
Straw Board	60.00	@	65.00
News Board	45.00	@	50.00
Chip Board	40.00	@	42.00
Wood Pulp Board	4.50	@	5.00
(Carload Lots)			
Binder Boards—			
No. 1, per ton	85.00	@	90.00
No. 2, per ton	70.00	@	75.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	66.00	@	68.00
Slaters	70.00	@	72.00
Best Tarred, 1-ply (per roll)	1.85	@	1.95
Best Tarred, 2-ply (per roll)	1.55	@	1.70
Best Tarred, 3-ply	2.10	@	2.15
No. 1 Mixed Paper	.65	@	.70

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	2.25
Domestic	1.75	@	2.00
Manila Rope	3.50	@	4.00
Sisal Rope	1.25	@	2.00
Mixed Rope	1.10	@	1.25
Scrap Burlaps	1.50	@	1.65
Wool Tares, heavy	3.00	@	3.50
Mixed Strings	1.25	@	1.35
No. 1, New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.25	@	2.50

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.50	@	3.60
No. 2 Hard White	3.00	@	3.25
No. 1 Soft White	2.75	@	3.00
No. 2 Soft White	1.90	@	2.00
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.90	@	2.00
Writing Paper	1.65	@	1.75
No. 1 Books, heavy	1.25	@	1.30
No. 2 Books, light	.85	@	.90
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	1.15	@	1.20
Container Manila	.90	@	1.00
Old Kraft	2.00	@	2.20
Common Paper	.50	@	.60
No. 1 Mixed Paper	.60	@	.75
Straw Board, Chip	.65	@	.70
Binders Board, Chip	.65	@	.70
Overissue News	.80	@	.90
Old Newspaper	.60	@	.65

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.11½	@	.12
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07½	@	.08
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable	.04	@	.04½
Fancy	.05½	@	.06
Cottons—according to grades—			
Blue Overall	.07½	@	.08
New Blue	.03½	@	.04
New Black Soft	.05½	@	.06
New Light Seconds	.03	@	.03½
Khaki Cuttings	.04½	@	.05
Corduroy	.03	@	.03¾
New Canvas	.08	@	.09
New Black Mixed	.05	@	.05½

Domestic Rags (Old)

White, No. 1—			
Repacked	4.50	@	5.25
Miscellaneous	3.50	@	4.00
White, No. 2—			
Repacked	.02½	@	.03
Miscellaneous	.02	@	.02¼
Thirds and Blues—			
Repacked	2.50	@	2.75
Miscellaneous	1.50	@	1.75
Black Stockings	3.25	@	3.50
Roofing Stock—			
No. 1	1.50	@	1.60
No. 2	1.37½	@	—
No. 3	1.25	@	1.35
No. 4	1.10	@	1.20
No. 5A	.90	@	1.00
B	.80	@	.90
C	.80	@	.90

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.15
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.07	@	.20
Superfines	.11	@	.31
News	.03½	@	.04
Book, Super	.06	@	.09
Book, M. F.	.05¼	@	.08½
Book, Coated	.08½	@	.20
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06½
Manila, Sul. No. 2	.03¼	@	.04½
No. 1 Kraft	.05¾	@	.06½
No. 2 Kraft	.04¾	@	.05¼
Common Bogus	.02	@	.02½
Delivered New England points			
Straw Board, rolls .009			57.50
Straw Board in Sheets, basis 35s to 70s			53.50
Filled News Board			50.00
Chip Board			47.50
Single Manila Pulp lined board	57.50	@	62.50
Single White, patent coated board bender	75.00	@	82.50
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.75	@	3.10
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.60	@	2.85
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	1.95	@	2.00
No. 1 Books, Heavy	1.35	@	1.45
No. 1 Books, Light	—	@	1.15
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	1.40	@	1.60
White Blank News	1.75	@	—
Old Kraft	2.05	@	2.25
Print Manila	.70	@	.80
No. 1 Mixed Paper	.55	@	.62½
Overissue News	.80	@	—
Old Newspapers	.65	@	—
Box Board, Chip	.65	@	—

Bagging

(Price f. o. b. Boston)

Gunny No. 1—			
Foreign	1.75	@	—
Domestic	1.50	@	1.60
Manila Rope and Strings—			
Foreign	3.50	@	3.75
Domestic	4.25	@	4.37½
Mixed Strings	.90	@	1.00
Scrap Burlaps	1.50	@	1.75
Wool Tares, heavy	1.40	@	1.60
New Burlap Cutting	2.15	@	2.25

Domestic Rags (New)

(Price f. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.12½	@	—
Silesias, No. 1	.07	@	.07½
New Unbleached	.10	@	.10½
Fancy	.05¾	@	.06
Washable	.04½	@	—
Cottons—According to Grades—Blue—			
Blue Overalls	—	@	.07
New Black, soft	.04	@	.04¼
Khaki Cuttings	.05	@	.05½
Corduroy	.03	@	.03½
New Canvas	.09	@	.10

Domestic Rags (Old)

(Price f. o. b. Boston)

White No. 1—			
Repacked	5.00	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Thirds and Blues—			
Repacked	2.12½	@	2.37½
Miscellaneous	1.75	@	1.90
Roofing Stock—			
No. 1	1.45	@	1.55
No. 2	1.33	@	1.43
No. 3	.96	@	—
No. 4	1.10	@	—

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¼	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
News f. o. b. Mills—			
Rolls (carloads)	3.25	@	—
Sheets (carloads)	3.75	@	—
Sheets (2 tons or over)	4.00	@	—
Book—			
No. 1 M. F. (carloads)	7.75	@	—
No. 2 M. F. (carloads)	7.50	@	—
No. 3 M. F. (carloads)	7.25	@	—
No. 1 S. C. (carloads)	8.25	@	—
No. 2 S. C. (carloads)	8.00	@	—
No. 3 S. C. (carloads)	7.75	@	—
No. 1 Coated and Litho	14.50	@	—
No. 2 Coated and Litho	13.50	@	—
No. 3 Coated and Litho	12.75	@	—
Coated tinted	.15	@	—
Wrapping—			
Rag Brown	4.85	@	—
White Rag	5.25	@	—
"B" Manila	5.65	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.20	@	—
M. G.	7.35	@	—

Pulp

(F. o. b. Mill)

Ground wood	25.00	@	27.00
Sulphite easy bleaching	58.00	@	60.00
Sulphite news grade	55.00	@	58.00
Sulphite, bleached	75.00	@	80.00
Sulphate			65.00

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	3.00	@	—
White Blk, News	1.50	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.25	@	—
Light and Crumpled Book Stock	1.10	@	—
Ledgers and Writings	1.40	@	—
Solid Ledgers	1.40	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.80	@	—
Strictly Folded	.47½	@	.52½
No. 1 Mixed Paper	.55	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.12	@	.12½
Fancy Shirt Cuttings	.06	@	.06¼

WANT AND FOR SALE ADVERTISEMENTS

HELP WANTED

WANTED—Experienced man to operate tub-sizing machine in New York City. Part time work. Address, Box 27-573, care Paper Trade Journal. S-29

PRODUCTION MANAGER—For waxed paper plant. Must understand all phases and be able to plan production from beginning to end. Permanent well-paying position for man who qualifies. State age, references. Confidential. Address, Box 27-576, care Paper Trade Journal. O-13

LARGE PAPER HOUSE wants a man to cut and finish paper and fill orders from stock. Must be experienced in cutting, counting and finishing paper. Good proposition to the right man. Address, Box 27-578, care Paper Trade Journal. O-6

CAMERON REWINDER FOREMAN—For waxed paper plant in Middle West. Must be perfect operator and understand all operations thoroughly; capable of handling men. In reply state age, references. Confidential. Address, box 27-575, care Paper Trade Journal. O-13

WANTED—Men to operate Cameron Rewinders—must be fully acquainted with machine. No one need apply under thirty years and without experience. Sixty hour week—wages 80 cents per hour and over. Address, Box 27-577, care Paper Trade Journal. S-29

CHEMICAL ENGINEER WANTED for large pulp and paper mill. Graduate of University, Canadian preferred. Give particulars of age and experience. Address, Box 27-529, care Paper Trade Journal. S-29

PAPER TRADE readers find our Service effective in making connections. Individual. Confidential. Personally planned by Jacob Penn, known by all mill owners. Not agency. Jacob Penn, Incorporated, 9 Park Place, New York. tf.

IF YOU are open to overtures for new connection, and qualified for a salary between $2,500 and $25,000, your response to this announcement is invited. The undersigned provides a thoroughly organized service, of recognized standing and reputation, through which preliminaries are negotiated confidentially for positions of the calibre indicated. The procedure is individualized to each client's personal requirements; your identity covered and present position protected. Established seventeen years. Send only name and address for details. R. W. Bixby, Inc., 117 Downtown Building, Buffalo, New York. tf.

CHEMIST WANTED for large pulp and paper mill. Graduate of University, Canadian preferred. Give particulars of age and experience. Address, Box 27-528, care Paper Trade Journal. S-29

WANTED—First-class modern boss finisher for mill making sulphite bond and specialties. Must be able to handle help and work to a system. Address, Box 27-533, care Paper Trade Journal. S-29

MACHINE TENDERS WANTED on cylinder tissues, top felt. Steady work, no dull periods. Address, Box 27-546, care Paper Trade Journal. O-6

WANTED—Superintendent for crepe paper plant in East. Reply, giving experience and reference in first letter. Address, Box 27-547, care Paper Trade Journal. O-13

WANTED—An experienced adjuster on a Lockport machine, both flat and square; also on a Potdevin S O S. State experience and salary expected. Steady position for the right man. All communications will be held strictly confidential. Address, Box 27-502, care Paper Trade Journal. tf.

WANTED—First-class practical soda mill superintendent. One who can organize and control help. Address, Box 27-562, care Paper Trade Journal. O-6

WANTED—Operator for Cameron Rewinder. Must be A-1 and capable of handling light weight papers. Address, Box 27-584, care Paper Trade Journal. S-29

Classified Advertising Brings Results

SITUATIONS WANTED

PULP AND PAPER MILL SUPERINTENDENT—Wants similar position in sulphite or Kraft pulp and paper mill. 40 years old, 18 years practical experience. Graduate chemical engineer. Has done research work on cooking of sulphite and Kraft pulp, bleaching, beating and soda recovery. Also mill construction. At present in charge of production in a Kraft pulp and paper mill. Address, Box 27-566, care Paper Trade Journal. O-27

SALESMAN—Twenty-five years paper business, good appearance, energetic, able to think and plan work, excellent references. Christian, wants connection where hard work and application will count. Available immediately. Address, Box 27-567, care Paper Trade Journal. O-6

SALES EXECUTIVE WITH 15 YEARS EXPERIENCE IN MANUFACTURING AND JOBBING OF WRAPPING PAPERS, AT PRESENT CONNECTED, BUT SEEKS A CHANGE FOR REASONS WHICH CAN BEST BE GIVEN IN PERSON. AVAILABLE JANUARY 1st, OR THEREAFTER. HIGHEST REFERENCES CAN BE OFFERED. ADDRESS, BOX 27-581, CARE PAPER TRADE JOURNAL. O-6

SALESMAN with 12 years experience selling paper and paper specialties desires to represent mill or jobber in New York. No objection to traveling. Age 38. Best references. Address, Box 27-583, care Paper Trade Journal. O-6

POSITION AS MASTER MECHANIC—20 years experience handling men and upkeep; repairs, new work and erecting. Best of reference. Address, Box 27-585, care Paper Trade Journal. O-13

SUPERINTENDENT—Open for position October 1st. Book, bond, writing, waxing, hanging, board and other grades. Can handle help and get results. Go anywhere. Address, Box 27-586, care Paper Trade Journal. N-10

WANTED—Position as machine tender or tour boss. Steady, married, sober. Understand all grades of box and test boards. Can give references as to ability. Address, Box 27-587, care Paper Trade Journal. O-6

ENGINEER—Technically trained, broad experience in pulp, paper mill design. Well versed in construction, plant operation, maintenance, estimating, machinery design and its construction. Capable of assuming full responsibility from drawing board to erected job. Thoroughly seasoned, planning, routing, and layout work. Address, Box 27-588, care Paper Trade Journal. S-29

BOSS BEATERMAN OR BEATER ENGINEER—Experienced on most all grades. 37 years of age. Good on colors. Steady. Address, Box 27-590, care Paper Trade Journal. O-13

PAPER SALESMAN—Ten years experience calling on jobbing trade Chicago and Midwest territory, desires mill connection. Familiar with coarse wrappings, paper bags and toilet paper. Now employed, wishes to make change. Address, Box 27-589, care Paper Trade Journal. O-6

SALES PROMOTION POST sought by a man thirty-five years of age, seventeen years in paper business; has general executive experience and special aptitude for selling; either personal or management. Unimpeachable character. Enduring connection desired where initiative and enthusiasm can find outlet. Special aim to locate opening where financial participation can ultimately result. Address, Box 27-591, care Paper Trade Journal. O-6

TOUR BOSS, now employed, wants to make change; all grades box, test and container board; handles help successfully; A-1 on production and repair. Address, Box 27-592, care Paper Trade Journal. O-6

SUPERINTENDENT—Trained in the manufacture of box board specialties, tag and coating mill boards, can guarantee quality, production, efficiency, and good organizer. Address, Box 27-593, care Paper Trade Journal. tf.

SALESMAN—Executive, forty-five, Christian, excellent education, twenty-five years experience in fine papers, ten years as sales-manager, would like good mill connection. No objection to traveling, wide acquaintance in trade, unexceptional business and personal references. Address, Box 27-595, care Paper Trade Journal. O-13

SITUATIONS WANTED

POSITION WANTED by a thoroughly experienced paper bag maker, on self-opening, square and flat, and glassine bag machines, with or without printing. Address, Box 27-571, care Paper Trade Journal. O-13

MECHANICAL ENGINEER with five years experience in the manufacture of paper and pulp containers of various designs is seeking connection with a firm manufacturing similar articles. Have had excellent results with waterproofing, coloring and production. Best of references. Address, Box 27-579, care Paper Trade Journal. O-6

WANTED—Situation as boss beaterman in an up-to-date mill. A-1 on colors, long experience on specialties. Can furnish best of references. Address, Box 27-580, care Paper Trade Journal. S-29

MILL OR PRODUCTION MANAGER—Now superintendent of a well known mill, but want to make a change. A splendid business and paper making experience with an excellent production record. Well educated. Address, Box 27-501, care Paper Trade Journal. O-27

AGGRESSIVE PAPER SALESMAN, of executive ability and wide experience in the manufacture and sale of high-grade Book Papers—coated, uncoated and specialties—wishes to locate with Mill manufacturing book papers as direct representative with opportunity for advancement. Ten years Mill and Jobbing experience and knows book papers intimately, and can introduce new grades and highly profitable specialties. Wide acquaintance with both merchant and converter trade. Would also consider position as sales manager at mill. Highest credentials. Those having a proposition that offers a real opportunity for a high grade man, please address, giving full particulars, Box 27-495, care Paper Trade Journal. S-29

SUPERINTENDENT WISHES POSITION—Long experience on high grade papers. Book, news, hanging; specialties in white and colors. References. Address, Box 27-531, care Paper Trade Journal. S-29

CREDIT MANAGER-BOOKKEEPER: Young man, seven years experience with large paper concern, desires new connection with opportunity for advancement. Address, Box 27-532, care Paper Trade Journal. O-6

FELT SUPERINTENDENT—Ten years with representative mill making dry felt and flooring. Desires change. Capable of getting production and quality. Best references. Address, Box 27-523, care Paper Trade Journal. tf.

ASSISTANT SUPERINTENDENT — College graduate, chemist, nine years practical experience and research in rag fine writing papermaking and specialties, desires position with opportunity for advancement. Address, Box 27-320, care Paper Trade Journal. tf.

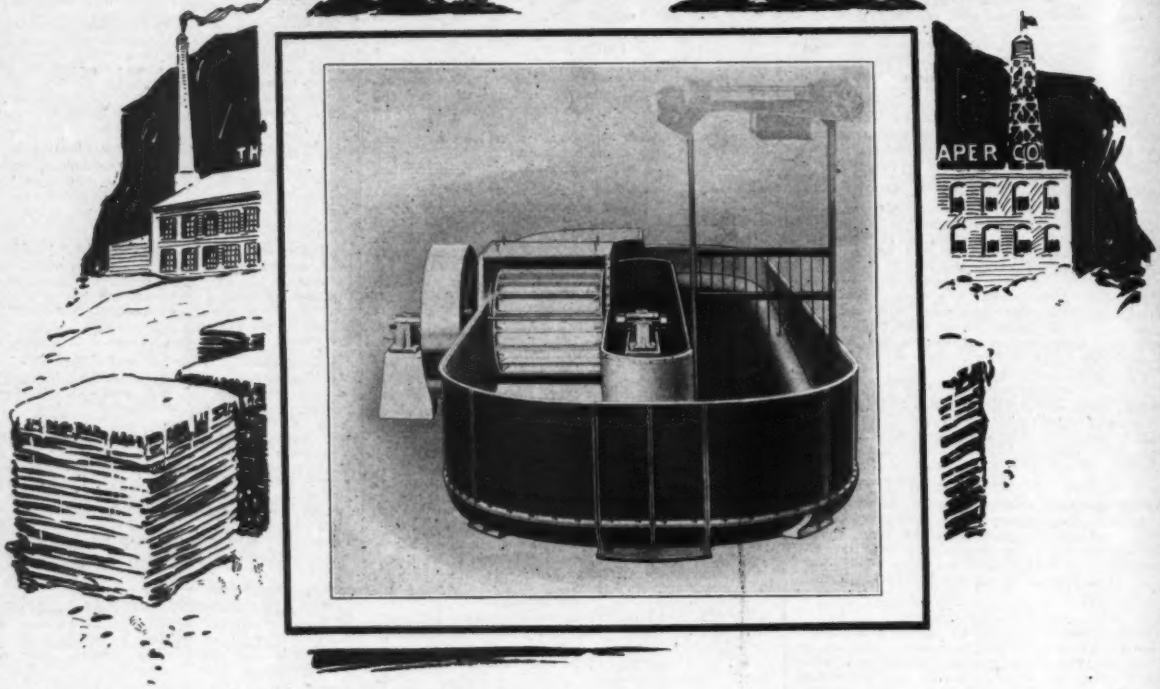
SUPERINTENDENT—Trained in the manufacture of tissues, all grades, plain and creped; high grade Kraft papers, converting specialties, crepes, waxing, crepe towels, and Kraft, waxed Kraft. Address, Box 27-563, care Paper Trade Journal. O-13

A-1 CYLINDER MACHINE TENDER wants position. Have had 19 years experience running machine making all grades of tissue. Thoroughly accustomed to top felt. Sober and steady. Married, have family, and want steady work. Can furnish best references. Address, Box 27-549, care Paper Trade Journal. O-6

WANTED—First-class man, with 20 years experience on all grades of board, desires position as superintendent, tour boss, or would consider position running machine where I could cover cylinder molds and make coucher rolls. Have been superintendent, tour boss and production manager of mill making 200 tons a day, with good results. Address, Box 27-551, care Paper Trade Journal. O-6

COATING MILL SUPERINTENDENT—Graduate chemist, having a well grounded knowledge of manufacture of all kinds of coated, printed, and gummed papers, desires change of position. Address, Box 27-553, care Paper Trade Journal. S-29

Frozen Laps



The Shartle Breaker will easily handle frozen laps. It will do away with a shredder and alone reduce your pulp to a satisfactory consistency. You can then pump stock direct to your secondary beaters and keep them operating at full efficiency—at the same time effecting a tremendous saving in labor.

If you are interested in saving from $10,000 to $30,000 a year on labor alone, you are interested in the Shartle Breaker System. 65 of them in use, or on order, and data covering their performance available. Write us.

If you will submit your problems, we will make a layout for you without charge.

Shartle Brothers Machine Company

MIDDLETOWN, OHIO

SHARTLE BROTHERS

DIVISION OF THE BLACK-CLAWSON COMPANY

Shartle SHARTLE **Breakers**

SITUATIONS WANTED

CAMERON SLITTER OPERATOR, experienced on all grades of paper, desires new connection. Practical paper maker. References. Address, Box 27-557, care Paper Trade Journal. S-29

SUPERINTENDENT open for position. Up-to-date on Kraft, waxing, bond and specialties that test. Familiar with foreign and domestic sulphates and sulphites, on high speed machines. Address, Box 27-548, care Paper Trade Journal. S-29

MILLWRIGHT POSITION WANTED—Man with 17 years experience in paper plants. A first-class machinist; good draftsman; understands maintenance and construction, layout work and costs. References. Address, Box 27-530, care Paper Trade Journal. S-29

PAPER MAKING MACHINERY DESIGNER AND GENERAL PLANT ENGINEER open after September 1st. Long and practical experience on this class of work, together with a number of years selling experience. Address, Box 27-497, care Paper Trade Journal. tf.

PULP AND PAPER MILL ENGINEER, with many years experience in design, construction and maintenance, desires position. References. Address, Box 27-470, care Paper Trade Journal. O-6

MILL CONNECTION WANTED—Capable experienced salesman desires mill connection. Years of experience in the sales of both coarse and fine paper. Willing to travel. Highest credentials as to ability and integrity. Address, Box 27-490, care Paper Trade Journal. tf.

POSITION WANTED as paper mill manager or production engineer. Extensive experience on rag and wood pulp papers. Services available at once. Can furnish best of references. Address, Box 27-503, care Paper Trade Journal. tf.

MISCELLANEOUS

CLARK MANUFACTURING COMPANY, Holyoke, Mass. Telephone 1828. Builders of cylinder moulds, couch and felt rolls, dandy rolls. We cover dandies and cylinders tight, for fast running machines. 3-5-27

WANTED—Mill ends and job lots in rolls or flats in any quantity, all grades. Also boards. Joseph Goldstein & Sons, 1302-9 N. Halsted Street, Chicago, Illinois. tf.

WANTED—Side or odd lot rolls ten to ninety pound basis. The larger the quantity the better we like it. Address, Box 27-481, care Paper Trade Journal. tf.

SEND YOUR ODD LOT LIST of coarse and fine papers together with samples to Goldman Paper & Paper Stock Co., 414 So. Front Street, Philadelphia, Pa. tf.

ACCOUNTANT—Books opened, closed, audited. Bookkeeping services for firms without bookkeeper. Tax Reports. Emil Mack, 507 Fifth Ave., New York City. Murray Hill 5021. O-13

PAPERMAKER—Expert ability, wants to communicate with capital to manufacture paper that will pay large dividends on money invested. References exchanged. Small mills, this is your opportunity. Address, Box 27-565, care Paper Trade Journal. S-29

WANTED

WANTED TO BUY—Yankee Dryer, any size; Napkin Folder, Interfolding Toilet Paper Converter. Address, Box 27-572, care Paper Trade Journal. S-29

CAMERON SLITTER—Wanted, 50" or 60" machine; must be in A-1 condition. In reply give all details. Address, Box 27-574, care Paper Trade Journal. O-13

WANTED—Modern Fourdrinier part, taking wire 60 to 70 ft. long and 120 to 126 inches wide. Must be in good repair and reasonably priced. Address, Box 27-582, care Paper Trade Journal. O-13

WANTED—A second hand Ream Cutter 64" or more. Address, Straubel Paper Company, Green Bay, Wis. O-20

WANTED

WANTED TO BUY—Used Cameron Rewinding machine of not less than 60" width. Must be in good condition. Address, Box 27-554, care Paper Trade Journal. S-29

WINDER WANTED—72 to 80 inches wide, to wind rolls 36 inches in diameter or larger. Address, Box 27-555, care Paper Trade Journal. O-6

WANTED—Second hand Slitter approximately eighty inches wide. Address, Box 27-482, care Paper Trade Journal. tf

WANTED—2 W. & P. Pulpers, 2 Filter Presses and 1 Rogers Wet Machine. Address, Box 27-285, care Paper Trade Journal. tf.

FOR SALE

2—BONNOT 6' DIA. X 60' ROTARY DRYERS OR KILNS, ALSO NEW SPARE PARTS; WILL BE SACRIFICED FOR QUICK SALE. STEIN-BRILL CORP., 25 CHURCH STREET, NEW YORK CITY. O-20

FOR SALE—Second-hand 1200 lb. wood tub N. & W. beater. In good condition. The Noble & Wood Machine Co., Hoosick Falls, N. Y tf

FOR SALE—Fully equipped mill at Lambertville, New Jersey; ready to run for light weight papers. Easy terms. Address, Box 27-521, care Paper Trade Journal. S-29

FOR SALE—6 Used Jones Imperial Jordans, with bronze or steel fillings. Will sell "as is" or factory rebuilt. THE NOBLE & WOOD MACHINE CO., Hoosick Falls, N. Y. tf.

FOR SALE—One 48" x 75" Hooper 2-color press, slotted cylinders, chain feed, clutch pulley. Good condition. Address, Chas. N. Braun Machinery Co., 1831 Lafayette St., Fort Wayne, Indiana. O-6

FOR SALE—Six pieces Mt. Vernon Dryer Canvas, 72 inches by 30 yards; five pieces 72 inches by 32 yards. All in original packages. On account of changing machine have no use for this material and will sell cheap. Address, Box 27-594, care Paper Trade Journal. S-29

FOR SALE—One Trimbey Automatic Consistency Regulator. Good condition, immediate delivery, reasonable price. Arvey Manufacturing Co., Olean, N. Y. S-29

FOR SALE—Three-color Rotary printing press, 36" cylinders, 65" wide. Address, Box 27-596, care Paper Trade Journal. O-6

HELP WANTED

Superintendent

who has a thorough mechanical knowledge of automatic folding and embossing machinery for the converting of tissue paper specialtiees. A splendid position which promises an excellent future to the right man of initiative and executive ability. Give full details in first letter, which will be treated strictly confidential. Address, Box 27-597, care Paper Trade Journal. S-29

Address Replies

to advertisements appearing under Box Numbers in care of

PAPER TRADE JOURNAL
10 East 39th St.,
New York, N. Y.

FOR SALE

HEADQUARTERS
For Good Used Machinery

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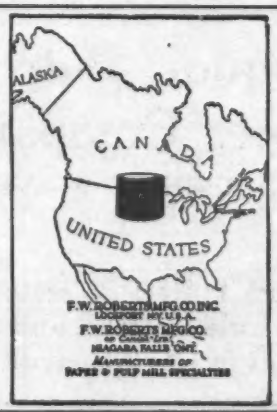

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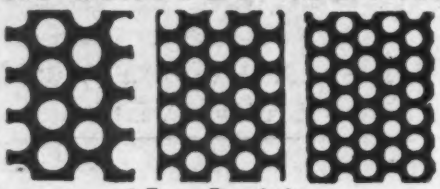

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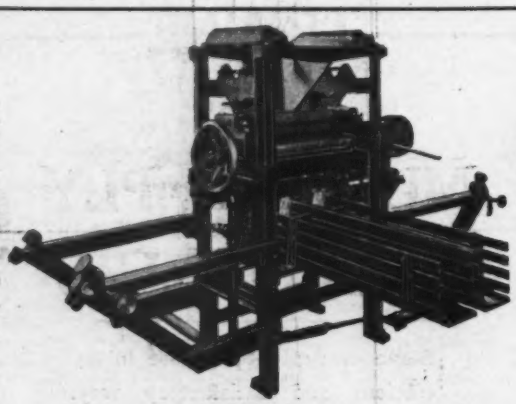

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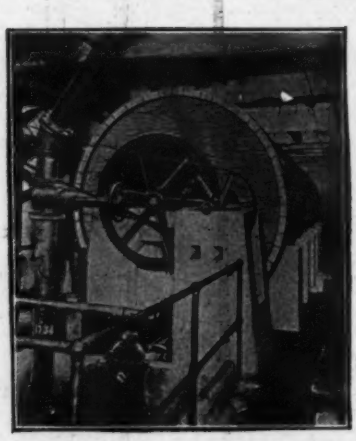

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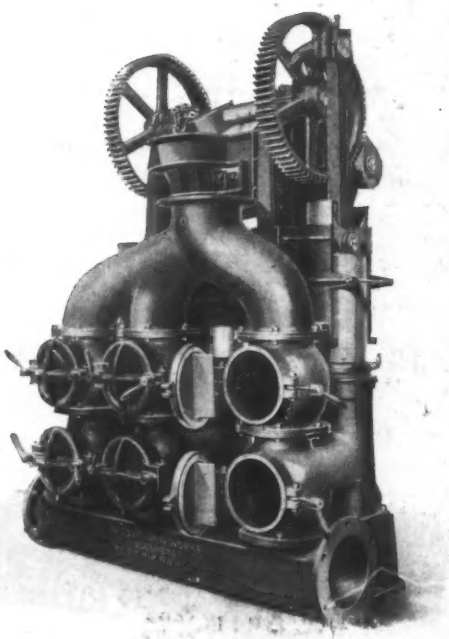

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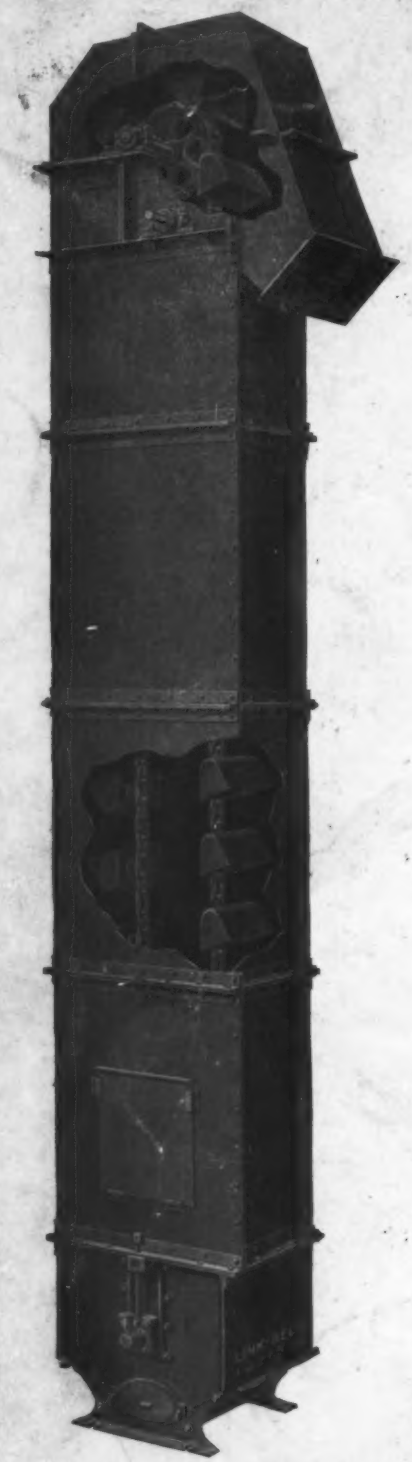

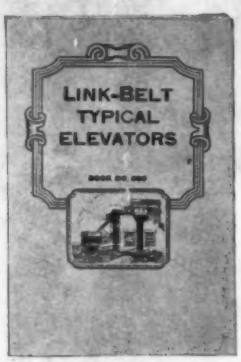

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